HALLIBURTON NUS
Environmental Corporation

EG&G ROCKY FLATS

SOLAR PONDS / PONDCRETE / SALTCRETE

~~WA~~STE PROCESSING

CONTRACT NUMBER: PC84017JB

~~ORIGINAL~~ Abbreviated

10/2/92

1. PROPOSAL FOR MODIFICATION TO INCORPORATE REVISED PHASE II STATEMENT OF WORK.

2. PROPOSAL ADDRESSING PHASE I COST IMPACTS RESULTING FROM THE ANTICIPATED REPLACEMENT OF THE PHASE II STATEMENT OF WORK TO THE PHASE I PORTION OF THE SUBCONTRACT.

SEPTEMBER 02, 1992

INVENTORY OF DOCUMENTS FURNISHED FOR ICF KAISER

Date	Title	Originator	Contract Deliverable/Ref. #
8/91	RFP Stabilization Project	W.C. Henderson/Brown & Root	Job # JR1198
11/91	RFP Stabilization Project	W.C. Henderson/Brown & Root	Job# JR1198
1/92	Treatability testing for EG&G Stabilization Project	Halliburton	
1/92	Sludge densification/ water Mgmt. program	T. Bittner/Halliburton	L#RF-HEH-92-007
1/92	Project status debriefing	T. Bittner/Halliburton	L#RF-HED-92-0026
2/92	Enclosed slide copies/DOE Breifing	T. Bittner/Halliburton	L#RF-HED-92-0065
3/92	Pond sludge waste Char. report/ Clarifier sludge waste Char. report	T. Bittner/Halliburton	Deliv. 224A, 224E
7/92	(Pre. Draft) Pondsludge treatability study report & Process Formulation report	Halliburton	Deliv. 231A1, 236A1
7/92	Saltcrete waste char. report	Halliburton	Deliv. 224C
7/92	Treatability study & process formulation report Pond 207C & Clar.	Halliburton	Deliv. 235A, 236A, 235E, 236E
9/92	Project breifing/ Pondcrete	Halliburton	Fax transmission
9/92	Proposal to Inc revised Phase II Stmt. of work & Proposal addr. cost impacts.	Halliburton	Con#PC84017JB

HALLIBURTON NUS
Environmental Corporation

Environmental Technologies Group
ROCKY FLATS SOLARPOND/PONDCRETE PROJECT
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September 2, 1992

EG&G Rocky Flats, Inc.
Rocky Flats Plant
Procurement, Bldg. 131
P.O. Box 464
Golden, Colorado 80402-0464

ATTENTION: Mr. Steve Heiman
Subcontract Administrator

SUBJECT: SUBCONTRACT PC 84017JB ROCKY FLATS SOLAR POND/PONDCRETE PROJECT
PROPOSAL FOR MODIFICATION OF SUBCONTRACT.
[WBS 710 PROJECT MANAGEMENT – HALLIBURTON NUS ROCKY FLATS DENVER]

REFERENCE: REQUEST FOR PROPOSAL DATED AUGUST 10, 1992

Dear Mr. Heiman:

HALLIBURTON NUS Environmental Corporation (HNUS) is pleased to submit the enclosed proposal for modification of subcontract PC 84017JB to incorporate the revised Phase II statement of work. Additionally, a Cost Plus Fixed Fee proposal addressing the Phase I impacts resulting from the revised Phase II Statement of Work is enclosed.

We believe that our proposals represent an excellent understanding of the technical scope of work required to be performed along with the principal obstacles and uncertainties that must be overcome to achieve success. As a result of these uncertainties, our fixed price proposal does not include any downtime and contains the number of operating days to be included in the contract. Stand-by rates during downtime are separately priced should it be required.

If you have any questions on our proposal, please do not hesitate to contact me. We are prepared to provide answers by phone or, if you prefer, meet with you to discuss any issues which might require resolution.

HNUS is dedicated to the successful completion of the Rocky Flats Solar Ponds and Pondcrete/Saltcrete Project. I give you my personal assurance that we continue to employ our best efforts to the timely completion of this important project.

Sincerely,
HALLIBURTON NUS ENVIRONMENTAL
CORPORATION

David K. Dougherty
Vice President
Environmental Projects Division

Enclosures: Phase I, II Proposal (4 copies)

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SECTION I.

INTRODUCTION

The HALLIBURTON NUS Environmental Corporation (HNUS) cost proposal for completing the Solar Pond/Pondcrete Remediation Project for Phases I and II at Rocky Flats is contained in the following sections.

Significant cost growth from the original contract has been identified and is reflected in both the Phase I and Phase II proposals. The following is a summary of the major contributors to the cost growth (details attached):

PHASE I

1. MINIMIZE WASTE VOLUMES - EG&G requested HNUS to minimize waste volumes. This request resulted in the proposal of two process trains instead of the one originally proposed. COST IMPACT - $4.8 MILLION.

2. MATERIAL HANDLING STUDY/CASTING STATION - originally proposed but deleted during negotiations as being too expensive. EG&G originally stated that HNUS work stops upon delivering product, as certifiable by the PCP, to an EG&G supplied station for casting. EG&G directed HNUS to provide conceptual engineering through detailed design of pondsludge processing casting stations, inspection stations, and material handling systems. EG&G then authorized the expenditures for the associated equipment, bulk materials, and installation for the two process trains. COST IMPACT - $1.6 MILLION.

3. HOMOGENIZATION AND CONSOLIDATION OF THE PONDS - originally proposed but deleted by EG&G during negotiations stating that HNUS had not provided sufficient technical justification to warrant the expense. EG&G subsequently approved this work after evaluating the changes in site conditions such as 1) discovery of crystalline layer in C Pond, 2) necessity to divorce interceptor trench water from B Pond, and 3) requirements of Chlorination. COST IMPACT - $8.3 MILLION.

4. CONCURRENT ENGINEERING WITH WASTE CHARACTERIZATIONS AND TREATABILITY STUDIES - originally proposed to have engineering be completed prior to beginning the other studies. EG&G requested simultaneous studies to expedite the process. COST IMPACT - $1.1 MILLION.

5. TRASH INCLUSION FOR PONDCRETE/SALTCRETE - originally proposed but deleted by EG&G during negotiations. HNUS performed a material handling study which disclosed that space limitations, manpower and equipment constraints exist which will not allow EG&G to provide stripped triwalls at a rate required for processing. EG&G subsequently agreed that there was no acceptable alternative method and requested HNUS to proceed with the engineering/design studies. COST IMPACT - $2.2 MILLION.

6. MINIMIZE ONSITE ERECTION - as a result of the unique work conditions at Rocky Flats, EG&G directed HNUS to design and procure the fabrication of modules to house various process equipment. COST IMPACT - $1.7 MILLION.

7. ADDITIONAL DOCUMENTATION REQUIREMENTS - original contract documented the deliverables required. EG&G requested a substantial number of added studies and reports to be submitted. COST IMPACT - $165,000.

8. DURABILITY TEST AND SAMPLE RETURN - Durability testing requirements were added as a result of the uncertainties regarding the time lapse before subsequent shipment of waste. Funding for sample return procedure from the Pittsburgh Lab was deleted by EG&G and later reinstated. COST IMPACT - $268,000.

9. ONSITE LABORATORY - originally proposed and deleted by EG&G. HNUS was subsequently directed to design, procure, and install the onsite lab. COST IMPACT - $335,000.

10. TRAILERS - EG&G has awarded the mobilization of a construction trailer and shower trailer to HNUS. COST IMPACT - $28,000.

11. CONSTRUCTION EQUIPMENT SUPPORT - Site construction support for process equipment was originally in EG&G's scope. EG&G subsequently directed HNUS to procure necessary erection support equipment. COST IMPACT - $747,000.

PHASE II

1. MINIMIZE WASTE VOLUMES - originally proposed and deleted during negotiations as not required. EG&G subsequently requested HNUS to minimize waste volumes. This request resulted in the proposal of two process trains from the one originally proposed. COST IMPACT - $5.0 MILLION.

2. ON-SITE LAB - originally proposed and deleted by EG&G. HNUS now directed to provide on-site lab. COST IMPACT - $1.2 MILLION

3. POZZOLAN BLENDING SERVICES - originally proposed to bring in bulk materials to Rocky Flats site for blending. Will now blend and store offsite and deliver to plant. COST IMPACT - $1.0 Million

Section II - Phase I Proposal

Section III - Phase II Proposal

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PHASE 1 COST RE-FORECAST

This section contains information on the re-forecasted cost of the Phase 1 portion of the Solar Ponds and Pond/Saltcrete remediation for contract PC84017JB. The re-forecast is based on the schedule transmitted to EG&G on 11 May 1992 which shows final completion on 25 September 1993.

The information in this section is divided into three documents.

1. SUMMARY OF COSTS - Shows the Original Budgets, Forecast Budget, Actual Costs as of 24 July 1992 and the Forecast to Complete. This information is divided into major categories per the same format contained in the Monthly Report.

2. COST COMPARISON AND PROJECTION - This report shows Labor, Material/ Subcontracts/Services and Total costs columns which are subdivided into Period Costs, To-Date Costs, Open Commitments, Total Costs, Forecast to Complete, Forecast Budget and Over/Under categories. These categories are shown for each work package listed down the left side of the report. This is a standard BRICS report which is included in the Monthly Report.

3. VARIANCE REPORT - This report shows the variance activity which has adjusted the original budget to equal the current forecast budget. It has been sorted based on change order category. The change order categories are based on 'big picture' changes which have affected the costs. Generally, there are multiple Project Variance Notices recording individual issues relative to each change order. This report is also included in the Monthly Report.

The total cost for Phase 1 has risen from $13,100,000 plus in fee to $32,759,559 plus n fee. The primary reasons for this cost increase are as follows:

1. The total schedule duration has increased by 29 weeks.

2. There are two process trains for the pondsludge processing instead of one.

3. The on-site lab has been added back into the scope.

4. Brown & Root was required to pursue multiple design options while characterization and treatability work was still in process.

5. ESD was required to accelerate the characterization and treatability studies. Also, additional work was required.

6. EPD was required to supply a construction trailer, shower trailer and construction equipment which were EG&G's responsibility per the original contract.

7. A major subcontractor, Lefco, was added to perform homogenization and consolidation activities which were deleted from the DATE proposal.

8. A major subcontractor, Halliburton Services, was added to provide equipment, engineering, erection assistance, and operating personnel for the 207C Process Train.

9. Two casting/material handling/inspection systems were added at the request of the client. This increased engineering, procurement, material and erection services costs significantly.

10. Qualtec was added to provide labor and equipment for the 207A/B Process Train.

11. ASI's costs increased to support the safety and QA/QC activities related to the increased work.

PHASE 1 RE-FORECAST ASSUMPTIONS

The Phase 1 Re-Forecast costs were calculated using the following assumptions.

1. The 09 May 1992 baseline schedule (transmitted to EG&G 11 May 1992) is used as the basis for all EPD costs. The scheduled completion for all activities is 22 September 1993.

2. Construction activities to complete by 31 December 1992. Costs include labor, rental equipment , bulk materials and miscellaneous ODC's. Bulk materials and construction rental equipment costs are based on actual purchase orders. ODC costs are based on the Brown & Root construction estimate. There is $116k for ODC's.

3. Process Equipment:
   a. Rental equipment (category 'A') is based on an eight month duration.
   b. Purchased equipment (category 'D') costs includes the ten month amortization.
   c. Subcontract equipment (Halliburton Services, Lefco and Qualtec) is included in the 'Equipment' category on the summary sheet.

4. Training costs included are: $49k for construction personnel; $543k for Halliburton Services (included in work package 140; needs to be moved); $31k credit for Brown & Root engineering. The total forecast training budget is $610k.

5. The labor burdens forecast budget has been reduced to the actual costs to-date based on the HNUS forward pricing rates. The actual costs will be reduced to 0 once EG&G has paid RF019. RF019 is the invoice adjusting the old labor burdens, overhead and G&A rates to the new DCAA disclosure statement and redetermined rates for 1991.

6. Overhead costs are applied to EPD direct costs. This is applied to variance activity only. ESD and LSD costs include overhead for their respective organizations.

7. G&A is applied to all EPD direct costs, LSD costs and ESD non-laboratory costs.

8. Fee is applied to all costs except ESD laboratory costs which has overhead, G&A and fee included in the catalog price billed to EPD.

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9. The Lefco costs are based on the following assumptions:
   a. Processing durations: 83 calendar days for 207C/clarifier and 105 calendar days for 207A/B.
   b. Consolidation has already started and will continue until 207A/B reclaim begins.
   c. Assumes all 207C/ clarifier equipment will be mobilized by 14 Aug. 1992.
   d. Chlorination of 207C pond is continuous with reclaim. 207A/B chlorination is based on Lefco letter of 14 May 1992.
   e. 132 shifts for 207C and 140 shifts for 207A/B.
   f. The proposed rates were for a single fourteen hour shift. The rates were multiplied by 10/14 to get a ten hour shift rate as contractually specified.

10. The Qualtec costs are based on the following assumptions:
   a. 105 total calendar days
   b. The first 22 days are a lump sum cost.
   c. Costs for the remaining 11 weeks based on weekly rates.
   d. Trial run is for six weeks.
   e. Seven days of equipment decontamination is included.

11. The ASI costs are based on the following assumptions:
   a. One health & safety person and one QA/QC person will be required through 22 September 1993.
   b. Costs based on proposal of 01 July 1992.

12. The ESD costs are based on the following assumptions:
   a. The revised projections include all work for pondsludge plus any pond/ saltcrete work through waste characterization. This does not include cost associated with future pond/saltcrete work.
   b. The lab analysis will require 35 tests during the surrogate processing. The cost is estimated to be $3000/ea.
   c. Overhead is included in the cost to EPD and is either ; , (division 2028 only) or (for divisions 2048 and 2049). This mark-up is applied to labor only.

13. The Halliburton Services costs are based on the following assumptions:
   a. On-site duration for 207C equipment is ten months.
   b. On-site duration for 207A/B standard equipment is four months.
   c. On-site duration for 207A/B non-standard equipment is ten months.
   d. On-site duration for 207A/B third party rental equipment is ten months.
   e. Catalog pricing includes fee in H/S billings to EPD.

14. The LSD costs include overhead in their costs to EPD at applied to labor.

15. Brown & Root has overhead applied to their costs to EPD. All B&R profit has been eliminated from B&R total price. EPD overhead, G&A and profit percentages applied to B&R cost.

COST IMPACT #1

MINIMIZE WASTE VOLUMES

BROWN & ROOT prepared the DESIGN BASIS MEMO for Pondsludge processing that was transmitted to EG&G in August, 1991. The DESIGN BASIS MEMO provided a detailed discussion of the pros and cons between a low water ratio and a high water ratio process design. The low water ratio processing scenario was developed based upon the premise that the material in the ponds would be amenable and responsive to densification and further dewatering, and that the minimum volume of stabilized waste was desired. The basis for the high water ratio design centered upon a concern about the viability of the low water ratio design (i.e. the low density of the sludges in the pond will not permit selective sludge reclaim and the sludge solids are not amenable to densification). The DESIGN BASIS MEMO did not make a recommendation between the two process designs. However, the HALLIBURTON NUS Project Manager did recommend the Low Water Ratio (LWR) based upon three salient points:

1. The LWR will minimize the waste volume by a factor of three (3).

2. The LWR will save several months of processing time (the specific duration is a function of which data is used.

3. Although the front end equipment costs are higher, the LWR will save a significant amount of money as a result of minimizing the number of half crates generated and therefore the storage/disposal costs.

The EG&G Project Manager in letter 91-RF-5895 dated September 5, 1991 directed HALLIBURTON NUS to proceed with the Low Water Ratio process equipment design.

The DESIGN BASIS MEMO stated that although the LWR design was based primarily upon the characteristics of the 207A and 207B complex pond sludges, the material in pond 207C could probably be accommodated without modification by simple re-routing of some of the process streams. The slurry from 207C would be received into the holding tank in the same manner as the other slurries. However, the dewatering or filtration system would not be used and the feed slurry would be pumped directly at the appropriate feed rate into the cement mixing operation.

In March 1992, it became apparent that the location of the process train south of Pond 207A caused a transportation problem due to the complex conveying system required to transport the half crates to the 750 Pad. The limited commercial availability of several conveying components was such that the overall project schedule was being impacted. At this time, HALLIBURTON NUS decided with

concurrence from EG&G that two process trains would be required. The Pond 207C process train would produce eight half crates per hour and be located adjacent to 750 Pad. The 207A&B process train would still be located south of Pond 207A and produce four half crates per hour to be transported to the 750 Pad via trucks.

The inability of EG&G to store the half crates has caused HALLIBURTON NUS to deviate significantly from the original proposal. The limited half crate storage space caused the conceptual and detail engineering to be greatly increased so the volume of half crates produced would be reduced. Finally, since HALLIBURTON NUS proposed only one Pondsludge process train, the addition of a second unit has significantly increased the estimated equipment costs.

COST IMPACT - $4.8 MILLION.

COST IMPACT #2

MATERIAL HANDLING STUDY/CASTING STATION

Deliverable 412 (Material Handling Study) was to prepare two simulation models to include all inputs, process unit operations and outputs for the Pondcrete/Saltcrete reprocessing and Pondsludge processing. The first option was to cover six processing options with the major goal of determining EG&G support requirements. The second option was to cover up to twelve processing options with the major goal of determining bottlenecks to aid in final process selection. The cost content included labor and purchase of modeling software. The original budget was a total of $191,128. The deliverable was submitted to EG&G on October 2, 1991.

The contract indicated that HNUS' responsibility ends at the casting nozzle. The casting/material handling systems are EG&G's responsibilities. These conclusions are reached based on a review of HNUS' and EG&G's responsibilities as listed in the PHASE I and PHASE II Statements of Work.

HNUS issued letter RF-HED-92-0111 on 07 March 1992 requesting written confirmation to proceed on the design, procurement and construction of the casting stations and material handling systems for the 207A/B and 207C process trains. EG&G issued letter 92-RF-3412 on March 23, 1992 directing HNUS to "resume the Material Handling Study for the Pondsludge process trains located in the vicinity of the 207 Ponds as specified in paragraph 3.5.2, PHASE I, Statement of Work of the contract".

COST IMPACT - $1.6 MILLION.

COST IMPACT #3

HOMOGENIZATION AND CONSOLIDATION OF THE PONDS

HALLIBURTON NUS transmitted to EG&G a Pond Consolidation and Homogenization Plan on June 26, 1991. The purpose of Consolidation and Homogenization at that time was to develop a uniform feed for the processing system and to remove the trash or oversized material from the sludge prior to reclaim. The original PHASE I cost estimate for this process was $81,637. EG&G, in an August 5, 1991 letter, directed HALLIBURTON NUS to stop work on the construction and homogenization plan until such time that a technical justification for the process could be developed.

On September 9, 1991 in letter 91-RF-5895, EG&G directed HALLIBURTON NUS to proceed with the low water ratio process unit. This design basis assumed that ponds 207 A&B were consolidated and homogenized, the principal reason being that significantly less water is ingested into the process when sludge is reclaimed from only one intake source. HALLIBURTON NUS prepared a RFP and competitively bid the consolidation process. After reviewing the bids submitted, HALLIBURTON NUS awarded the subcontract to LEFCO. HALLIBURTON NUS prepared a request for consent to award (Reference 92-RF-0244) that was transmitted to EG&G for approval. In this transmittal, HALLIBURTON NUS clearly indicated that consolidation was not included in the negotiated proposal dated October 2, 1991 for PHASE I. EG&G authorized the LEFCO subcontract in SEH-122-92 dated June 26, 1992. In letter 92-RF-8891 dated July 31, 1992; Don Ferrier of EG&G directed that Pond A be pumped into Pond B.

The principal cost of this decision was the increased equipment and personnel operating costs for a much more complex C Pond/Clarifier processing system, necessitated by discovery of a crystal layer in C Pond during Waste Characterization. Pathogens were also discovered in pond water, necessitating a chlorination process. The decision was made to blend the Clarifier with C Pond to eliminate one more processing waste stream, requiring additional chemical analyses and waste management.

COST IMPACT - $8.3 MILLION.

COST IMPACT #4

CONCURRENT ENGINEERING WITH WASTE CHARACTERIZATIONS AND TREATABILITY STUDIES

HALLIBURTON NUS was cognizant at the time of the PHASE I proposal that the critical element of the Solar Pond Project was the project schedule. In voluminous project correspondence including the PHASE I proposal, it has been noted that both conceptual and detail engineering had to be performed at a accelerated pace for the Project to have any chance at the November 8, 1992 completion date. In the baseline project schedule, conceptual engineering design was scheduled to start as soon as preliminary waste characterization became available. Due to delays in receipt of this preliminary characterization data, engineering design efforts were either invalidated or redirected on several occasions by subsequent more definitive waste characterization or treatability study data. For example, BROWN & ROOT, due to frequent design changes, continually produced and modified block flow diagrams over a ten (10) month period which in a typical engineering environment should only take a month. After expending considerable design effort, a process unit that produced waste form "pellets" had to be completely eliminated. In summary, the Project has experienced significant engineering cost overruns that were attributable to the lack of solid waste characterization information.

COST IMPACT - $1.1 MILLION.

COST IMPACT #5

TRASH INCLUSION FOR PONDCRETE/SALTCRETE

The concept of trash inclusion was originally proposed by HNUS and deleted by EG&G during negotiations. The Material Handling Study (Deliverable 412) performed by BROWN & ROOT concluded that space, manpower, and equipment constraints existed which would not allow EG&G to strip triwalls at the required processing rate. EG&G thus directed HNUS to proceed with engineering and design studies.

Also included in this category are labor re-forecasts reflecting additional personnel requirements as the complexity of the Project increased and a new end date of September, 1993.

COST IMPACT - $2.2 MILLION.

COST IMPACT #6

MINIMIZE ON-SITE ERECTION

Due to the unique work conditions at Rocky Flats Plant, HNUS was directed to modularize equipments wherever possible, thus accomplishing a maximum amount of assembly work prior to site arrival and also minimizing the requirements for ground anchors.

COST IMPACT - $1.7 MILLION.

OJECT : 2315 EG&G ROCKY FLATS
B: 3157 SOLARPOND/PONDCRETE

HALLIBURTON NUS ENVIRONMENTAL CORP.

PAGE NUMBER: 1
REPORT ID: VARI RPT
PREPARED: 08-31-1992
12:15

V A R I A N C E R E P O R T S
SORTED BY CHANGE ORDER NUMBER

NGE ORDERS G.E 006 & L.E 007

TROL KAGE	G/L CODE	V A R I A N C E NUMBER	TYPE	D A T E	CHANGE ORDER #	VARIANCE DESCRIPTION	QUANTITY	MANHOURS	COST
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			54,310.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			1,033.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			173,127.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			69,688.00
A	65006	E070	VAR	AUG 25,92	006	ENG EST EXT. FIELD ENG SUPPORT			244,912.00
A	65006	E047	VAR	AUG 24,92	006	FIELD ENGINEERING SUPPORT			271,220.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			52,587.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			111,542.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			87,071.00
	65006	E070	VAR	AUG 25,92	006	ENG EST EXT. FIELD ENG SUPPORT			5,217.00
	65006	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			134,175.00
	65006	E047	VAR	AUG 24,92	006	FIELD ENGINEERING SUPPORT			5,303.00
	699	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			205,743.43
	699	E070	VAR	AUG 25,92	006	ENG EST EXT. FIELD ENG SUPPORT			75,289.00
	699	E047	VAR	AUG 24,92	006	FIELD ENGINEERING SUPPORT			83,233.00
	699	E013	PND	APR 07,92	006	MODULARIZATION SCOPE ADDITION			75,809.94
	699	E047	VAR	AUG 24,92	006	FIELD ENGINEERING SUPPORT			29,860.00
	699	E070	VAR	AUG 25,92	006	ENG EST EXT. FIELD ENG SUPPORT			27,010.00
					* SUB-TOTAL	006		0.00	1,705,130.37
					*** GRAND TOTAL			0.00	1,705,130.37

AT END OF REPORT 12:15:58

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COST IMPACT #7

ADDITIONAL DOCUMENTATION REQUIREMENTS

Original contract documented the required deliverables. EG&G requested additional studies and reports to be prepared to document additional observations during the ongoing design effort.

COST IMPACT - $165,000.00.

COST IMPACT #8

DURABILITY TEST AND SAMPLE RETURN

Funding for sample return from the Pittsburgh Lab was deleted by EG&G and later reinstated. This directed HNUS to return all samples, used and unused, to Rocky Flats Plant for ultimate disposal.

Durability testing requirements were added to the HNUS Scope of Work due to uncertainties about the time lapse between processing of waste material and shipment to the ultimate disposal site.

COST IMPACT - $268,000.00.

COST IMPACT #9

ON-SITE LABORATORY

HALLIBURTON NUS, in the original November 16, 1990 proposal, stated that a fully equipped mixed waste laboratory would be installed on-site at Rocky Flats to support waste production efforts. The laboratory was to be staffed to perform the required wet chemistry analyses of waste input and to perform ECLP analyses on waste product output to verify compliance with Nevada Test Site requirements. Furthermore, the on-site laboratory was to be an extension of the Pittsburgh mixed waste laboratory and as such would utilize the same equipment, procedures, and quality assurance program. The estimated costs for the on-site analytical and support services in the November 16, 1990 proposal was $1,619,662.

As the design criteria for the on-site laboratory continued to be defined, HALLIBURTON NUS updated the cost estimate for the on-site laboratory to reflect the available information. The September 3, 1991 cost proposal had an estimated cost before overhead and G&A of $899,298.

At the September 1991 cost review meetings held between EG&G and HALLIBURTON NUS, EG&G directed HALLIBURTON NUS to remove the on-site laboratory from the cost estimate because the design criteria could not be adequately defined to develop a reasonable cost estimate. At that time, all costs associated with the on-site laboratory were removed except for actual expenditures of $69,681 that had already been incurred.

HALLIBURTON NUS requested, in letter RF-HED-92-0335 dated June 9, 1992; consent to proceed with the purchase of on-site laboratory equipment. EG&G, in letter SEH-125-92 dated July 1, 1992; notified HALLIBURTON NUS to proceed with the purchase of on-site laboratory equipment except for a table and Rad-Con Decon Spray.

COST IMPACT - $335,000.00.

COST IMPACT #10

TRAILERS

EG&G directed HNUS to mobilize a construction trailer and shower trailer to Rocky Flats Plant to support the HNUS erection crew.

COST IMPACT - $28,000.00.

COST IMPACT #11

CONSTRUCTION EQUIPMENT SUPPORT

HALLIBURTON NUS, in the negotiated proposal dated October 2, 1991, estimated construction equipment costs of $30,659 to erect the Pondsludge process train. This estimate was based upon the assumptions that constructions equipment historically is 8% of the total equipment costs provided that the process equipment is skid mounted.

The equipment associated with the current Pondsludge process design has increased significantly from that of the original designs. Consequently, construction equipment requirements have also increased. The basis for the current construction equipment estimate is the purchase orders issued to date by HALLIBURTON NUS. The most significant equipment purchase order is to Ridge Crane Services to supply 2 cranes with operators. These cranes will be on-site through Pondsludge processing to assist in Pondsludge reclaim.

COST IMPACT - $747,000.00.

CLIENT: EG&G | HALLIBURTON NUS | 02-Sep-92

JOB NO.: 3157 | COST COMPARISON OF PROCESS EQUIPMENT AND BULK MATERIAL

ROCKY FLATS SOLAR PONDS/PONDCRETE PROJECT

COMPANY/ITEM	ORIGINAL BUDGET	13 MAY 1992 FORECAST	FORECAST BUDGET	FORECAST BUDGET less ORIGINAL BUDGET
PROCESS EQUIPMENT				
207A/B PROCESS TRAIN	0	417,058	717,753	717,753
207A/B CASTING SYS.	0	330,000	204,580	204,580
207C PROCESS TRAIN	1,036,984	444,916	2,263,576	1,226,592
207C CASTING SYS.	0	326,000	320,279	320,279
EQUIPMENT DESIGN	0	0	4,463	4,463
POND CONSOLIDATION	0	0	900,934	900,934
Pondsludge Subtotal	1,036,984	1,517,974	4,411,585	3,374,601
POND/SALTCRETE	1,648,143	1,648,144	1,705,082	56,939
Subtotal	2,685,127	3,166,118	6,116,667	3,431,540
BULK MATERIAL				
207A/B PROCESS TRAIN			678,255	678,255
207A/B CASTING SYS.			21,101	21,101
207C PROCESS TRAIN	79,040		156,188	77,148
207C CASTING SYS.			37,896	37,896
POND/SALTCRETE	369,800	369,800	369,800	0
Subtotal	448,840	369,800	1,263,240	814,400
TOTAL	3,133,967	3,535,918	7,379,907	4,245,940

ORIGINAL BUDGET INCLUDES EQUIPMENT COSTS FROM PHASES 1, 2 AND 3 BASED ON THE EQUIPMENT LIST INCLUDED IN THE SUBCONTRACT; PC84017JB DATED 09 JANUARY 1992.

370167

PHASE I

ORIGINAL SCHEDULE VS. REVISED SCHEDULE

The original contract schedule was baselined on September 28, 1991 and issued to the client (EG&G) on October 1, 1991. The revised schedule was baselined on May 08, 1992 and issued to EG&G on May 11, 1992. The revised schedule incorporated additional work activities identified between September 28, 1991 and May 11, 1992. The issues that have changed the original schedule to its current revision are listed with summary explanations as follows:

- The original schedule had two process trains, pondsludge and pondcrete/saltcrete with a very limited amount of process equipment for both trains. The completion date for all waste forms processing was November 08, 1992 which included pondsludge as well as pondcrete/saltcrete. The revised schedule consists of three process trains; C pond & Clarifier, A/B pond and Pondcrete/Saltcrete process trains. The completion dates for the revised schedule for processing pondsludge is November 08, 1992 and August 05, 1993 for pondcrete/saltcrete processing.

- The homogenization of the ponds was added to the revised schedule. The homogenization would start before processing and end with the completion of processing operations of the pondsludge.

- The chlorination of A/B series solar ponds was added to the revised schedule for Phase 1. The chlorination is to have been completed before processing of pondsludges A/B.

- The consolidation of the B ponds and the transfer of A pond to B ponds was included in the revised schedule. This was to be completed before processing started.

- The material handling system was added to HNUS' scope of work in late March 1992. This consisted of engineering and procurement of the conveyor system as well as the casting station for C pond and A/B pond. EG&G would still man the half-crate handling system during the processing phase.

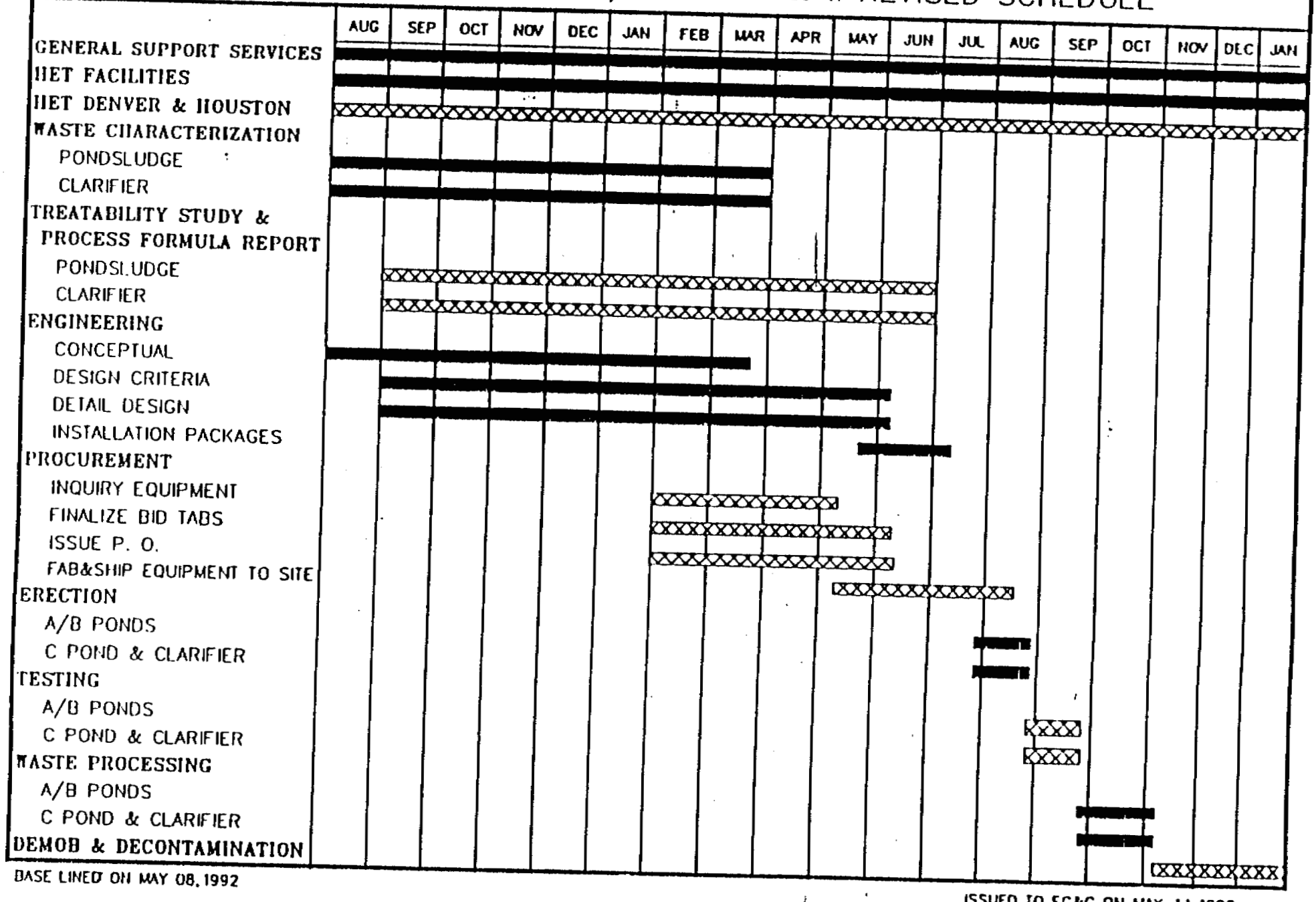
- The on site lab was deleted in the original schedule, but added back into the revised schedule. The on site lab would use an existing building to house the on-site lab.

- The processing of pondcrete/saltcrete in the revised schedule was deferred until 1993 due to the following reasons:
  - treatability studies (major effort on pondsludge)
  - engineering (" " ")
  - procurement (long lead time items, Komar crusher, sag mill, 10 to 12 months lead time)

EG&G is currently reviewing the design criteria for major pieces of equipment. Until a resolution is made on these primary pieces of equipment (Komar, sag mill, filter) the schedule completion date will be impacted. The pondcrete/saltcrete process train design criteria needs to be reviewed by EG&G/DOE to ensure that the process train satisfies the changing mission of the Rocky Flats facility.

• The original schedule was 24 months (05 March 1991 to 05 March 1993) and the revised schedule is 30.5 months ending on 22 September 1993. This 6.5 months extension in time was due to the deferment of pondcrete/saltcrete process train. The Phase I re-forecast includes an additional 65 weeks of labor, travel and ODC costs to support work through 22 September 1993. The reason for an additional 65 weeks of costs is because the original budget includeo Phase 1 costs through 01 July 1992 only. Therefore, 36 weeks of Project General Management (PGM) costs are added to Phase 1 to take costs to the original completion date of 05 March 1993 and 29 weeks were added to take PGM costs to the new completion date of 22 September 1993. The costs are shown in Project Variance Notices H016 for HNUS labor; H014 for travel and odc's; H021 for ASI (Health & Safety and QA/QC).

ROCKY FLATS SOLAR PONDS / PHASE I & II REVISED SCHEDULE



BASE LINED ON MAY 08, 1992

ISSUED TO EG&G ON MAY 11, 1992

ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Report: BASELINE
Project: ALTRTEST
Time Now: 08MAY92
Date: 20AUG92
Time: 15.56.12
Page: 1

Activity	Description	Start	Finish	Dur
	DEVELOP SECURITY PLAN	22JUL91	10AUG91	10
	GENERAL SUPPORT SERVICES	01JAN91	22SEP93	582
	NET FACILITIES	01MAY91	22SEP93	604
	NET ROCKY FLATS DENVER	05MAY91	22SEP93	644
	NET HOUSTON	05MAY91	22SEP93	644
	GENERAL EMPLOYEE TRAINING	01AUG91	14JUL92	239
	OPERATOR TRAINING PERSONNEL	23MAY92	10JUL92	40
	AWARD LETTER SUBCONTRACT	05MAY91	05MAY91	1
	LETTER SUBCONTRACT REV 0	06MAY91	27JUN91	104
	LETTER SUBCONTRACT REV 1	28JUN91	11JUL91	10
	LETTER SUBCONTRACT REV 2	12JUL91	22AUG91	30
	LETTER SUBCONTRACT REV 3	23AUG91	23SEP91	30
	LETTER SUBCONTRACT REV 4	24SEP91	23OCT91	22
	LETTER SUBCONTRACT REV 5	24OCT91	23NOV91	22
	NEGOTIATE DEFINITIVE CONTRACT	01JAN91	21FEB92	108
	SUBMIT DRAFT PLAN (LESS SCHED)	05AUG91	08APR91	25
	REVIEW DRAFT PLAN	10APR91	16APR91	5
	REVISE DRAFT PLAN	16APR91	22APR91	5
	REVIEW REVISED PLAN	08MAY91	14MAY91	5
	AWARD SABS - DSR/MOS	30APR91	06MAY91	5
	DEVELOP PROJECT SCHEDULE	29APR91	22AUG91	80
	DEVELOP COST ESTIMATE PHASE 1	20MAY91	20AUG91	20
	DRAFT SAMPLING PLAN	30MAY91	05JUN91	10
	INPUT TO SAMPLING/ANAL PLANS	01JAN91	07AUG91	40
	REVIEW SAMPLING PLAN	06JUN91	05JUL91	7
	FINALIZE SAMPLING PLAN	06JUL91	05AUG91	5
	DRAFT SAMPLING PLAN	01MAY91	14AUG91	10
	REVIEW SAMPLING PLAN	14AUG91	28AUG91	10
	FINALIZE SAMPLING PLAN	30AUG91	05NOV91	5
	EG&G DIRECTIVE TO SUBMIT PLANS	30MAY91	30MAY91	1
	DRAFT SAMPLING SOP	24APR91	10MAY91	15
	REVIEW SAMPLING SOP	15MAY91	04JUN91	10
	FINALIZE SAMPLING SOP	05JUN91	07AUG91	5
	DRAFT SAMPLING SOP	05JUN91	23AUG91	14

01 JAN 91 | 01 APR 91 | 01 JUL 91 | 01 OCT 91 | 01 JAN 92 | 01 APR 92 | 01 JUL 92 | 01 OCT 92 | 01 JAN 93 | 01 APR 93 | 01 JUL 93

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I-Planned
I-Critical
I-Baseline

Bar Chart Key: Early Dates

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OPEN PLAN (R4)

Report:
Project: BASELINE
Time Now: ALT2TEST
Date: 08MAY92
Time: 20AUG92
Page: 15.56.12
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ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
B2	REVIEW SAMPLING SOP	27AUG91	17OCT91	10
B3	FINALIZE SAMPLING SOP	18OCT91	12NOV91	5
C1	DRAFT SAMPLING SOP	05JUN91	23AUG91	10
C2	REVIEW SAMPLING SOP	27AUG91	17OCT91	10
C3	FINALIZE SAMPLING SOP	18OCT91	12NOV91	5
A1	COLLECT SAMPLES	11AUG91	30DEC91	20
A2	SHIP WASTE CHAR SAMPLES	12AUG91	23AUG91	10
A3	SHIP TREATABILITY SAMPLES	14NOV91	31MAR92	10
A4	STAGE BILLETS	02DEC91	31JAN92	15
B1	COLLECT SAMPLES	23DEC91	30APR92	92
B2	COLLECT SAMPLES FOR COMPOSITE	23DEC91	30APR92	92
B3	SHIP WASTE CHAR SAMPLES	16DEC91	29MAY92	115
B4	CREATE P/C COMPOSITE SAMPLE	30JAN92	07MAY92	66
B5	SHIP TREATABILITY SAMPLES	16DEC91	29MAY92	115
C4	STAGE BILLETS	02DEC91	31JAN92	15
C1	COLLECT SAMPLES	06JAN92	31JAN92	20
C2	COLLECT SAMPLES FOR COMPOSITE	06JAN92	31JAN92	20
C3	SHIP WASTE CHAR SAMPLES	08JAN92	31MAR92	20
C4	CREATE S/C COMPOSITE SAMPLE	30JAN92	31MAR92	1
C5	SHIP TREATABILITY SAMPLES	01MAR92	29MAY92	63
	COLLECT WASTE CHAR SAMPLES	20AUG91	21AUG91	2
	SHIP WASTE CHAR SAMPLES	21AUG91	23AUG91	2
	COLLECT TREATABILITY SAMPLES	13NOV91	13NOV91	2
	SHIP TREATABILITY SAMPLES	14NOV91	15NOV91	2
	ONSITE SAMPLE COLLECTION	18AUG91	30APR92	181
	ONSITE SAMPLE COLLECTION	11AUG91	30APR92	181
	DRAFT ANALYSIS & SAMPLING PLANS	10APR91	14MAY91	25
	REVIEW ANALYSIS/SAMPLING PLANS	15MAY91	04JUN91	10
	FINALIZE ANALYSIS PLAN	06JUN91	05AUG91	7
	DRAFT ANALYSIS PLAN	05JUN91	12AUG91	10
	REVIEW ANALYSIS PLAN	14AUG91	28AUG91	10
	FINALIZE ANALYSIS PLAN	30AUG91	09SEP91	5
	DRAFT ANALYSIS PLAN	05JUN91	12AUG91	10
	REVIEW ANALYSES PLAN	14AUG91	28AUG91	7

01 JAN 91 | 01 APR 91 | 01 JUL 91 | 01 OCT 91 | 01 JAN 92 | 01 APR 92 | 01 JUL 92 | 01 OCT 92 | 01 JAN 93 | 01 APR 93 | 01 JUL 93

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- Planned
- Critical
- Baseline

Bar Chart Key: Early Dates

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ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity Description

	Activity Description	Start	Finish	Dur
1	FINALIZE ANALYSIS PLAN	30AUG91	05NOV91	5
1	DRAFT ANALYSIS PLAN	15MAY91	04JUN91	10
2	REVIEW ANALYSIS PLAN	05JUN91	24JUL91	10
3	FINALIZE ANALYSIS PLAN	25JUN91	05AUG91	5
	PERFORM WASTE CHAR ANALYSIS	26AUG91	28FEB92	30
	OBSERVE WASTE CHAR ANALYSIS	26AUG91	13SEP91	15
	PERFORM WASTE CHAR ANALYSIS	17FEB92	11JUN92	82
	OBSERVE WASTE CHAR ANALYSIS	17FEB92	11JUN92	82
	PERFORM WASTE CHAR ANALYSIS	17FEB92	07MAY92	55
	OBSERVE WASTE CHAR ANALYSIS	17FEB92	07MAY92	55
	PERFORM WASTE CHAR ANALYSIS	26AUG91	28FEB92	30
	OBSERVE WASTE CHAR ANALYSIS	26AUG91	13SEP91	15
	VALIDATE WASTE CHAR DATA	03DEC91	31MAR92	10
	VALIDATE WASTE CHAR DATA	12JUN92	25JUN92	10
	VALIDATE WASTE CHAR DATA	08MAY92	21MAY92	10
	VALIDATE WASTE CHAR DATA	09DEC91	31MAR92	10
	DEVELOP WASTE CHAR REPORT	25NOV91	31MAR92	10
	REVIEW WASTE CHAR REPORT	06JAN92	31MAR92	5
	DEVELOP WASTE CHAR REPORT	26JUN92	10JUL92	10
	REVIEW WASTE CHAR REPORT	26JUN92	10JUL92	10
	REVIEW WASTE CHAR REPORT	13JUL92	24JUL92	10
	FINALIZE WASTE CHAR REPORT	27JUL92	31JUL92	5
	DEVELOP WASTE CHAR REPORT	22MAY92	05JUN92	10
	REVIEW WASTE CHAR REPORT	22MAY92	05JUN92	10
	REVIEW WASTE CHAR REPORT	08JUN92	19JUN92	10
	FINALIZE WASTE CHAR REPORT	22JUN92	06JUL92	10
	DEVELOP WASTE CHAR REPORT	25NOV91	31MAR92	10
	REVIEW WASTE CHAR REPORT	06JAN92	31MAR92	5
	DRAFT TREATABILITY STUDY PLAN	09SEP91	26SEP91	15
	INPUT TO TREAT. STUDY PLAN	09SEP91	26SEP91	10
	REVIEW TREATABILITY STUDY PLAN	27SEP91	01MAY92	178
	FINAL TREATABILITY STUDY PLAN	02JAN92	01MAY92	115
	DRAFT TREATABILITY STUDY PLAN	09SEP91	26SEP91	10
	DRAFT TREATABILITY STUDY PLAN	01JAN92	21AUG92	60

01 JAN 91 | 01 APR 91 | 01 JUL 91 | 01 OCT 91 | 01 JAN 92 | 01 APR 92 | 01 JUL 92 | 01 OCT 92 | 01 JAN 93 | 01 APR 93 | 01 JUL 93

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Bar Chart Key: Early Dates

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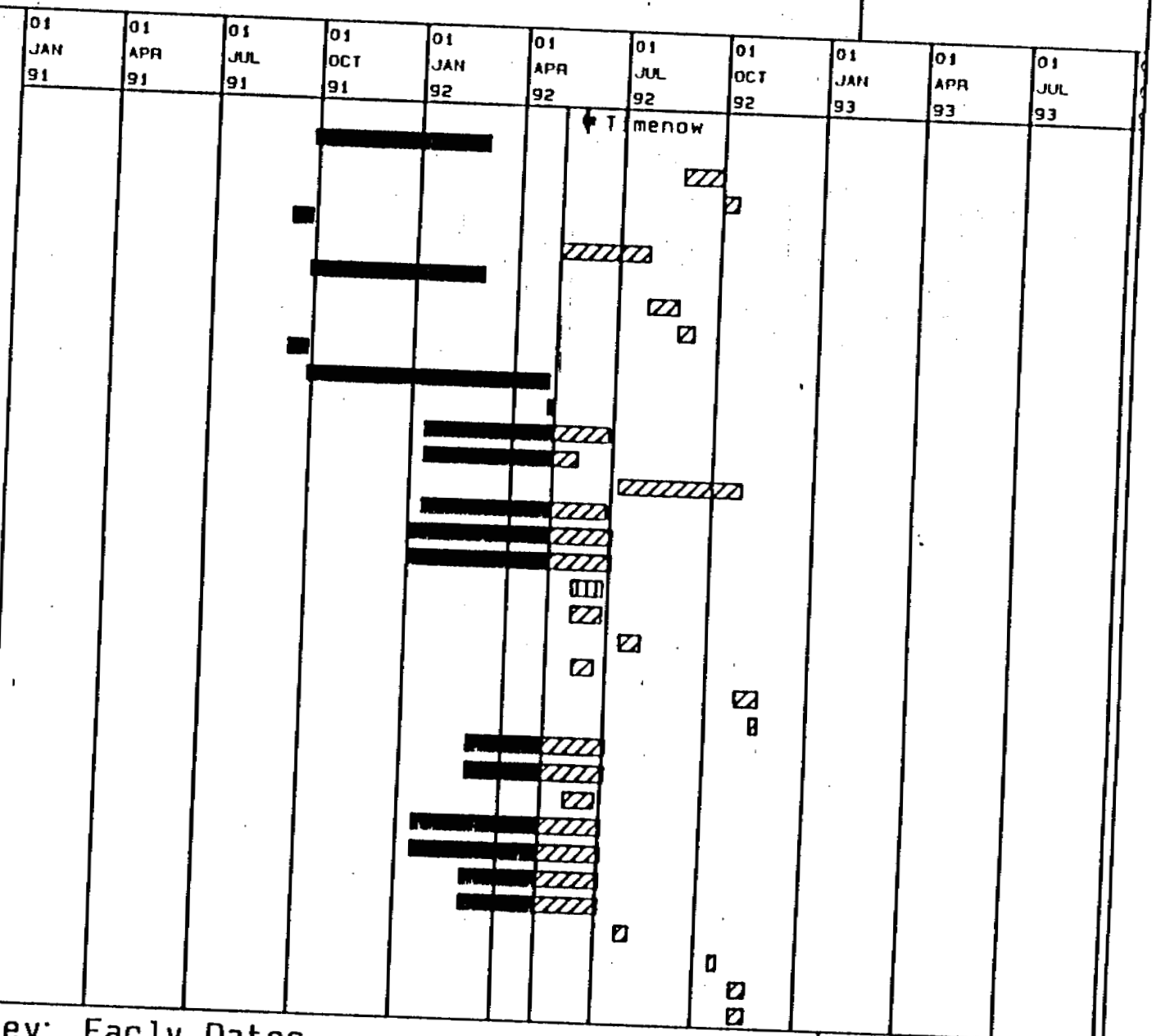
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

PROJECT: BASELINE
PROJECT: ALT2TEST
TIME FROM: 08MAY92
STD: 20AUG92
DATE: 15:56 12
PAGE: 1

Activity	Description	Start	Finish	Dur
	REVIEW TREATABILITY STUDY PLAN	27SEP91	01MAY92	10
	REVIEW TREATABILITY STUDY PLAN	25AUG92	30SEP92	26
	FINAL TREATABILITY STUDY PLAN	01OCT92	14OCT92	10
	DRAFT TREATABILITY STUDY PLAN	09SEP91	26SEP91	10
	DRAFT TREATABILITY STUDY PLAN	08MAY92	27JUL92	55
	REVIEW TREATABILITY STUDY PLAN	27SEP91	01MAY92	10
	REVIEW TREATABILITY STUDY PLAN	28JUL92	24AUG92	20
	FINAL TREATABILITY STUDY PLAN	25AUG92	08SEP92	10
	DRAFT TREATABILITY STUDY PLAN	09SEP91	26SEP91	10
	REVIEW TREATABILITY STUDY PLAN	27SEP91	01MAY92	188
	FINAL TREATABILITY STUDY PLAN	01MAY92	07MAY92	17
	PERFORM TREATABILITY STUDY	13JAN92	26JUN92	118
	PERFORM TREATABILITY STUDY	13JAN92	29MAY92	98
	PERFORM TREATABILITY STUDY	07JUL92	27OCT92	80
	PERFORM TREATABILITY STUDY	13JAN92	26JUN92	118
	DEVELOP TREATABILITY STUDY RPT	02JAN92	02JUL92	129
	REVIEW TREATABILITY STUDY RPT	02JAN92	02JUL92	129
	PRELIMINARY TREATABILITY RPT	29MAY92	25JUN92	20
	PRELIMINARY TREATABILITY RPT	29MAY92	25JUN92	20
	DEVELOP TREATABILITY STUDY RPT	13JUL92	31JUL92	15
	REVIEW TREATABILITY STUDY RPT	01JAN92	19JAN92	15
	DEVELOP TREATABILITY STUDY RPT	28OCT92	17NOV92	15
	REVIEW TREATABILITY STUDY RPT	11NOV92	17NOV92	5
	DEVELOP TREATABILITY STUDY RPT	01MAY92	02JUL92	87
	REVIEW TREATABILITY STUDY RPT	01MAY92	02JUL92	87
	PRELIMINARY TREATABILITY RPT	29MAY92	25JUN92	20
	DEVELOP PROCESS FORMULA REPORT	15JAN92	02JUL92	120
	INPUT TO PROCESS FORMULA RPT	15JAN92	02JUL92	120
	DEVELOP PROCESS FORMULA REPORT	01MAY92	02JUL92	87
	INPUT TO PROCESS FORMULA RPT	01MAY92	02JUL92	87
	DEVELOP PROCESS FORMULA REPORT	20JUL92	31JUL92	10
	INPUT TO PROCESS FORMULA RPT	15OCT92	21OCT92	5
	DEVELOP PROCESS FORMULA REPORT	04NOV92	17NOV92	10
	INPUT TO PROCESS FORMULA RPT	04NOV92	17NOV92	10



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Bar Chart Key: Early Dates

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ROCKY FLATS PLANT (USA)

Report: BASELINE
Project: ALTTEST
Data Date: 08MAY92
Print Date: 20AUG92
Time: 15:56:12
Page: 3

ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
	DEVELOP PROCESS FORMULA REPORT	01NOV92	02JUL92	87
	INPUT TO PROCESS FORMULA RPT	01NOV92	02JUL92	87
	DRAFT OPERATING PLAN	20MAY91	26JUN91	20
	EVALUATE POND LINER REPAIR	01MAY91	11JUL91	20
	DRAFT PROCESS CONTROL PLAN	15DEC91	02JUL92	139
A	INPUT TO PCP	15DEC91	05JUN92	120
	REVIEW PROCESS CONTROL PLAN	06JUL92	24JUL92	15
	FINALIZE PROCESS CONTROL PLAN	27JUL92	07AUG92	10
	DRAFT PROCESS CONTROL PLAN	15DEC91	02JUL92	139
A	INPUT TO PCP	15DEC91	05JUN92	120
	REVIEW PROCESS CONTROL PLAN	06JUL92	24JUL92	15
	FINALIZE PROCESS CONTROL PLAN	27JUL92	07AUG92	10
	DRAFT PROCESS CONTROL PLAN	15DEC91	07MAY92	112
A	INPUT TO PCP	15DEC91	20MAY92	112
	REVIEW PROCESS CONTROL PLAN	11MAY92	22MAY92	10
	FINALIZE PROCESS CONTROL PLAN	26MAY92	08JUN92	10
	DRAFT PROCESS CONTROL PLAN	15DEC91	07MAY92	112
A	INPUT TO PCP	15DEC91	20MAY92	112
	REVIEW PROCESS CONTROL PLAN	11MAY92	22MAY92	10
	FINALIZE PROCESS CONTROL PLAN	26MAY92	08JUN92	10
	DRAFT PROCESS CONTROL PLAN	15DEC91	10AUG92	165
	INPUT TO PCP	11AUG92	08SEP92	20
	REVIEW PROCESS CONTROL PLAN	09SEP92	06OCT92	20
	FINALIZE PROCESS CONTROL PLAN	07OCT92	17NOV92	30
	DRAFT PROCESS CONTROL PLAN	04NOV92	03DEC92	20
	INPUT TO PCP	04DEC92	17DEC92	10
	REVIEW PROCESS CONTROL PLAN	18DEC92	05JAN93	10
	FINALIZE PROCESS CONTROL PLAN	06JAN93	19JAN93	10
	DRAFT DESIGN CRITERIA	15APR91	14MAY91	15
	DRAFT DESIGN CRITERIA	20APR92	08MAY92	15
	PROCUREMENT OF LAB EQUIPMENT	22MAY92	10JUN92	13
	INSTALLATION OF LAB EQUIPMENT	11JUN92	24JUN92	10
	60 TEST OF LAB EQUIPMENT	25JUN92	01JUL92	5
	CAST & CURE SURROGATE TESTING	04JUN91	05JUN91	2

01 JAN 91 | 01 APR 91 | 01 JUL 91 | 01 OCT 91 | 01 JAN 92 | 01 APR 92 | 01 JUL 92 | 01 OCT 92 | 01 JAN 93 | 01 APR 93 | 01 JUL 93

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-Planned
-Critical
-Baseline

Bar Chart Key: Early Dates

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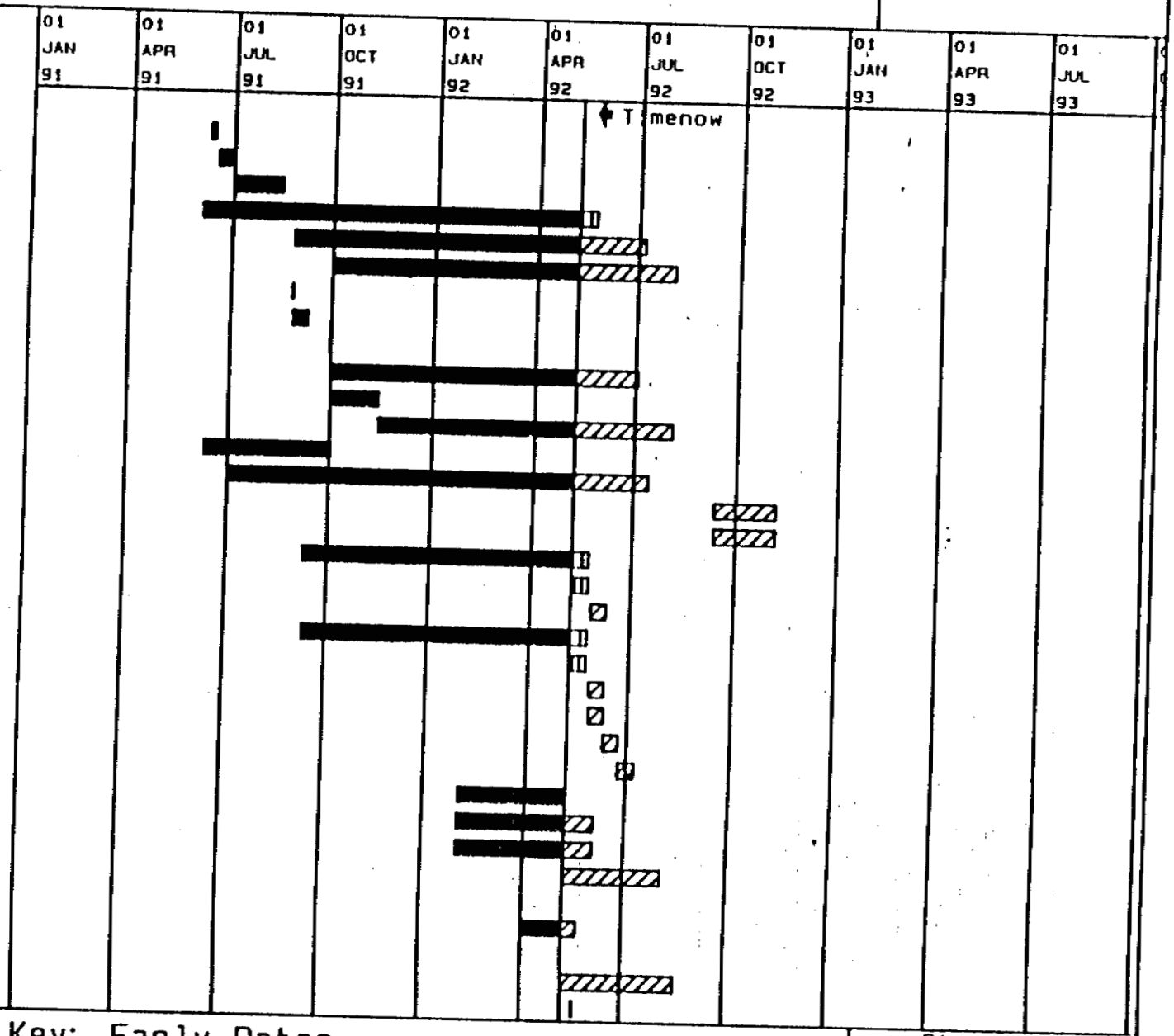
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
2	SHIP SURROGATE SAMPLES TO	10JUN91	12JUN91	3
3	DRAFT SURROGATE TESTING PLAN	17JUN91	28JUN91	10
4	EVAL TESTS	01JUL91	19AUG91	20
5	PETITION CONCEPTUAL ENGINEERING	01JUN91	22MAY92	245
5	PETITION CONCEPTUAL ENGINEERING	27AUG91	06JUL92	215
*	PETITION CONCEPTUAL ENGINEERING	01OCT91	03AUG92	211
	ISSUE DESIGN BASIS MEMO	26AUG91	26AUG91	1
*	APPROVE DESIGN BASIS MEMO	27AUG91	09SEP91	10
	ISSUE DESIGN BASIS MEMO	30SEP91	30SEP91	1
	APPROVE DESIGN BASIS MEMO	01OCT91	02JUL92	190
	ISSUE DESIGN BASIS MEMO	04OCT91	13NOV91	1
	APPROVE DESIGN BASIS MEMO	14NOV91	03AUG92	179
	DEVELOP REPORT - PHASE I	10JUN91	01OCT91	30
	DEVELOP REPORT MATERIAL HAND-	01JUL91	13JUL92	260
	PROCESS C POND AND CLARIFIER	11SEP92	05NOV92	48
*	PROCESS A AND B PONDS	11SEP92	05NOV92	48
	DEVELOP PROC DESIGN CRITERIA	09SEP91	22MAY92	178
	REVIEW PROCESS DESIGN CRITERIA	11MAY92	22MAY92	10
	FINALIZE PROC DESIGN CRITERIA	26MAY92	08JUN92	10
	DEVELOP DESIGN PACKAGE	10SEP91	22MAY92	177
	REVIEW DESIGN PACKAGE	11MAY92	22MAY92	10
	FINALIZE DESIGN PACKAGE	26MAY92	08JUN92	10
	ASSEMBLE INSTALLATION PKG	26MAY92	08JUN92	10
	REVIEW INSTALLATION PKG	09JUN92	22JUN92	10
	FINALIZE INSTALLATION PKG	23JUN92	07JUL92	10
	INQUIRY EQUIPMENT	01FEB92	07MAY92	65
	FINALIZE BID TABS: EQPT	01FEB92	02JUN92	85
	ISSUE P.O.'S - EQPT	01FEB92	02JUN92	85
	TAB/SHIP TO SITE: EQPT & BULKS	08MAY92	03AUG92	60
	ISSUE RFQ/HALF CRATE HANDLING	01APR92	01APR92	1
	FINALIZE BID TAB/HANDLING SYS	01APR92	20MAY92	35
	ISSUE LETTER/HALF CRATE SYSTEM	01APR92	01APR92	1
	TAB/SHIP HALF CRATE SYSTEM	08MAY92	17AUG92	70
	ISSUE P.O. HALF CRATE SYSTEM	18MAY92	18MAY92	1



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-In progress
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-Critical
-Baseline

Bar Chart Key: Early Dates

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OPEN PLAN (R)

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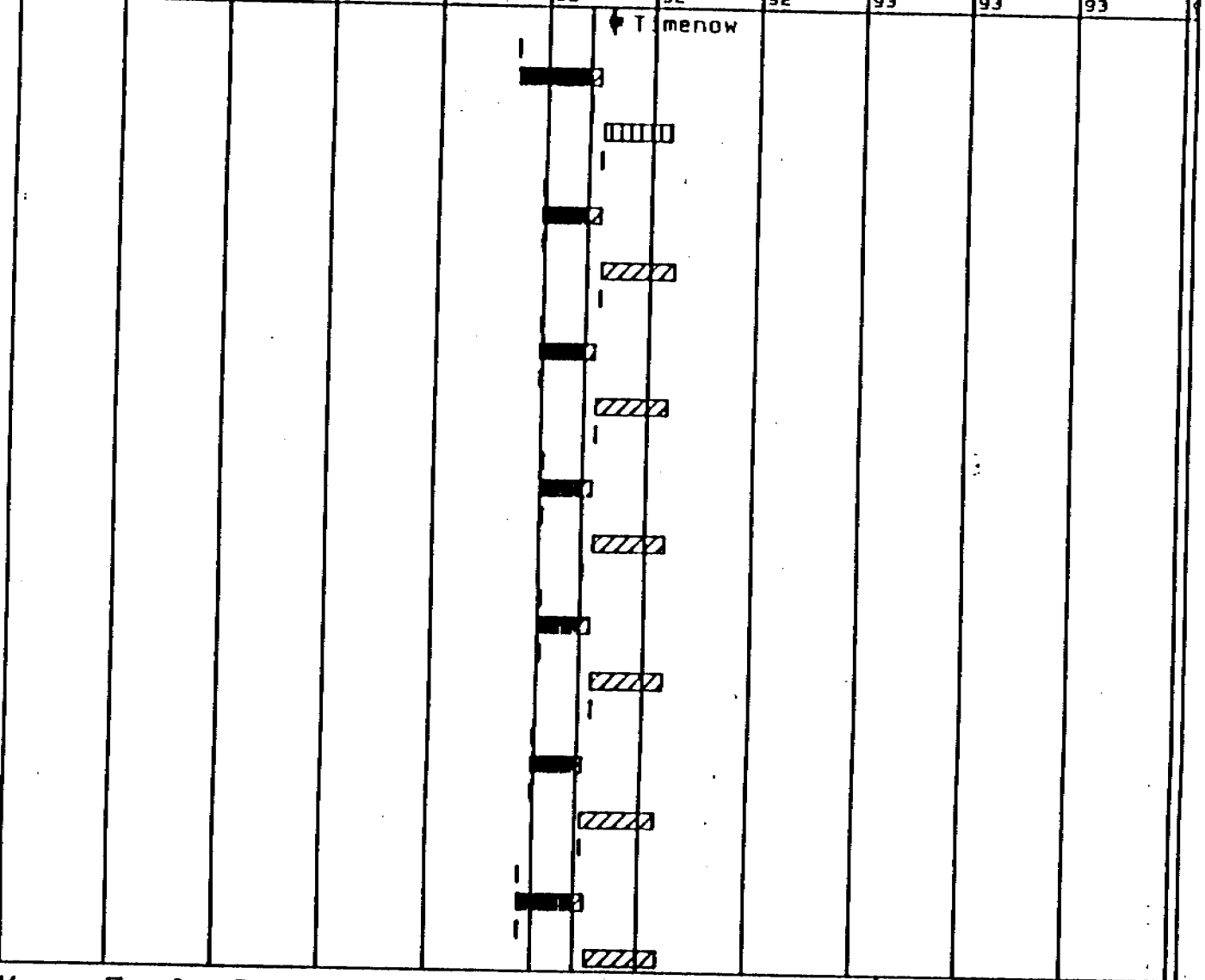
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
6	ISSUE RFQ/ CEMENT MIXER	06MAY92	06MAY92	1
7	FINALIZE BID TAB CEMENT MIXER	07MAY92	15MAY92	49
8	ISSUE LETTER CEMENT MIXER	08MAY92	08MAY92	1
9	FAB/SHIP CEMENT MIXER	20MAY92	16JUL92	40
0	ISSUE P.O. CEMENT MIXER	18MAY92	18MAY92	1
1	ISSUE RFQ HORI. SLURRY PUMPS	30MAY92	30MAY92	1
2	FINALIZE BID TAB HORI. SLURRY	30MAY92	18MAY92	35
3	ISSUE LETTER HORI. SLURRY PUMP	30MAY92	30MAY92	1
4	FAB/SHIP HORI SLURRY PUMPS	20MAY92	21JUL92	43
5	ISSUE P.O. HORI. SLURRY PUMPS	19MAY92	19MAY92	1
6	ISSUE RFQ VERT. SLURRY PUMPS	30MAY92	30MAY92	1
7	FINALIZE BID TAB VERT. SLURRY	30MAY92	15MAY92	34
8	ISSUE LETTER VERT/SLURRY PUMPS	30MAY92	30MAY92	1
9	FAB/SHIP VERT SLURRY PUMPS	18MAY92	17JUL92	43
0	ISSUE P.O. VERT SLURRY PUMPS	18MAY92	18MAY92	1
1	ISSUE RFQ HEPA FILTER SYSTEM	03JN92	03JN92	1
2	FINALIZE BID TAB HEPA FILTER	03JN92	15MAY92	30
3	ISSUE LETTER HEPA FILTER SYS	03JN92	03JN92	1
4	FAB/SHIP HEPA FILTER SYSTEM	18MAY92	17JUL92	43
5	ISSUE P.O. HEPA FILTER SYSTEM	08MAY92	08MAY92	1
6	ISSUE RFQ NON HZRDS DUST COL	03JN92	03JN92	1
7	FINALIZE BID TAB NON HZRD DUST	03JN92	15MAY92	30
8	ISSUE LETTER NON HZRDS DUST	03JN92	03JN92	1
9	FAB/SHIP NON HZRDS DUST COL.	18MAY92	17JUL92	43
0	ISSUE P.O. NON HZRDS DUST COL	18MAY92	18MAY92	1
1	ISSUE RFQ HORI. ANSI PUMPS	30MAY92	30MAY92	1
2	FINALIZE BID TAB HORI ANSI PUMP	30MAY92	11MAY92	30
3	ISSUE LETTER HORI. ANSI PUMPS	30MAY92	30MAY92	1
4	FAB/SHIP HORI ANSI PUMPS	12MAY92	13JUL92	43
5	ISSUE P.O. HORI. ANSI PUMPS	12MAY92	12MAY92	1
6	ISSUE RFQ AGITATORS	20MAY92	20MAY92	1
7	FINALIZE BID TAB AGITATORS	20MAY92	15MAY92	40
8	ISSUE LETTER AWARD AGITATORS	20MAY92	20MAY92	1
9	FAB/SHIP AGITATORS	18MAY92	17JUL92	43



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-Critical
-Baseline

Bar Chart Key: Early Dates

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ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Report: BASELINE
Project: ALTRTEST
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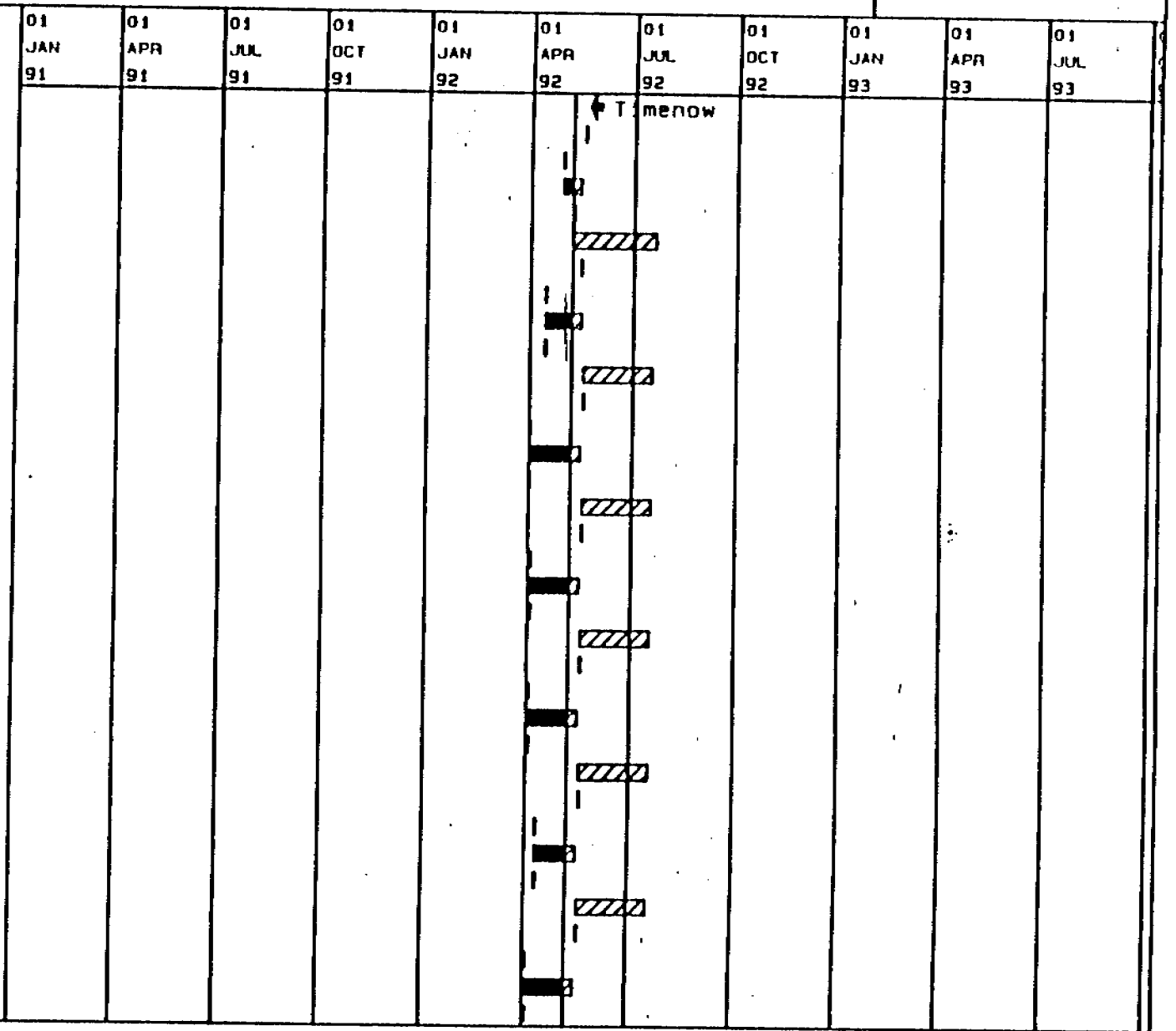
Activity	Description	Start	Finish	Dur
840	ISSUE P.O. AGITATORS	18MAY92	18MAY92	1
841	ISSUE RFQ SLURRY FILTER	29APR92	29APR92	1
842	FINALIZE BID TAB SLURRY FILTER	29APR92	14MAY92	12
843	ISSUE LETTER SLURRY FILTER	08MAY92	08MAY92	1
844	FAB/SHIP SLURRY FILTER	08MAY92	20JUL92	50
845	ISSUE P.O. SLURRY FILTER	15MAY92	15MAY92	1
846	ISSUE RFQ SURGE TANKS	14APR92	14APR92	1
847	FINALIZE BID TAB SURGE TANKS	14APR92	15MAY92	23
848	ISSUE LETTER SURGE TANKS	14APR92	14APR92	1
849	FAB/SHIP SURGE TANKS	18MAY92	17JUL92	43
850	ISSUE P.O. SURGE TANKS	18MAY92	18MAY92	1
851	ISSUE RFQ SCALPING SCREEN	01APR92	01APR92	1
852	FINALIZE BID TAB SCALPING SCR	01APR92	15MAY92	32
853	ISSUE LETTER SCALPING SCREEN	01APR92	01APR92	1
854	FAB/SHIP SCALPING SCREEN	18MAY92	17JUL92	43
855	ISSUE P.O. SCALPING SCREEN	18MAY92	18MAY92	1
856	ISSUE RFQ ROTARY SCR THICKENER	03APR92	03APR92	1
857	FINALIZE BID TAB ROTARY THICK	03APR92	15MAY92	30
858	ISSUE LETTER ROTARY SCR THICK	03APR92	03APR92	1
859	FAB/SHIP ROTARY SCREEN THICK.	18MAY92	17JUL92	43
860	ISSUE P.O. ROTARY SCR THICKEN	18MAY92	18MAY92	1
861	ISSUE RFQ LOSS/WEIGHT FEEDERS	03APR92	03APR92	1
862	FINALIZE BID TAB LOSS/WEIGHT	03APR92	15MAY92	30
863	ISSUE LETTER LOSS/WEIGH FEED	03APR92	03APR92	1
864	FAB/SHIP LOSS/WEIGHT FEEDERS	18MAY92	17JUL92	43
865	ISSUE P.O. LOSS/WEIGHT FEEDERS	18MAY92	18MAY92	1
866	ISSUE RFQ FLYASH/CEMENT FEED	10APR92	10APR92	1
867	FINALIZE BID TAB CEMENT FEED.	10APR92	15MAY92	25
868	ISSUE LETTER CEMENT FEEDER SYS	10APR92	10APR92	1
869	FAB/SHIP CEMENT FEEDER SYSTEMS	18MAY92	17JUL92	43
870	ISSUE P.O. CEMENT FEEDER SYS.	18MAY92	18MAY92	1
871	ISSUE RFQ FLOCCULANT FEED SYS	03APR92	03APR92	1
872	FINALIZE BID TAB FLOCC. SYSTEM	03APR92	15MAY92	30
873	ISSUE LETTER FLOCCULANT SYS.	03APR92	03APR92	1



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Bar Chart Key: Early Dates

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Report: BASELINE
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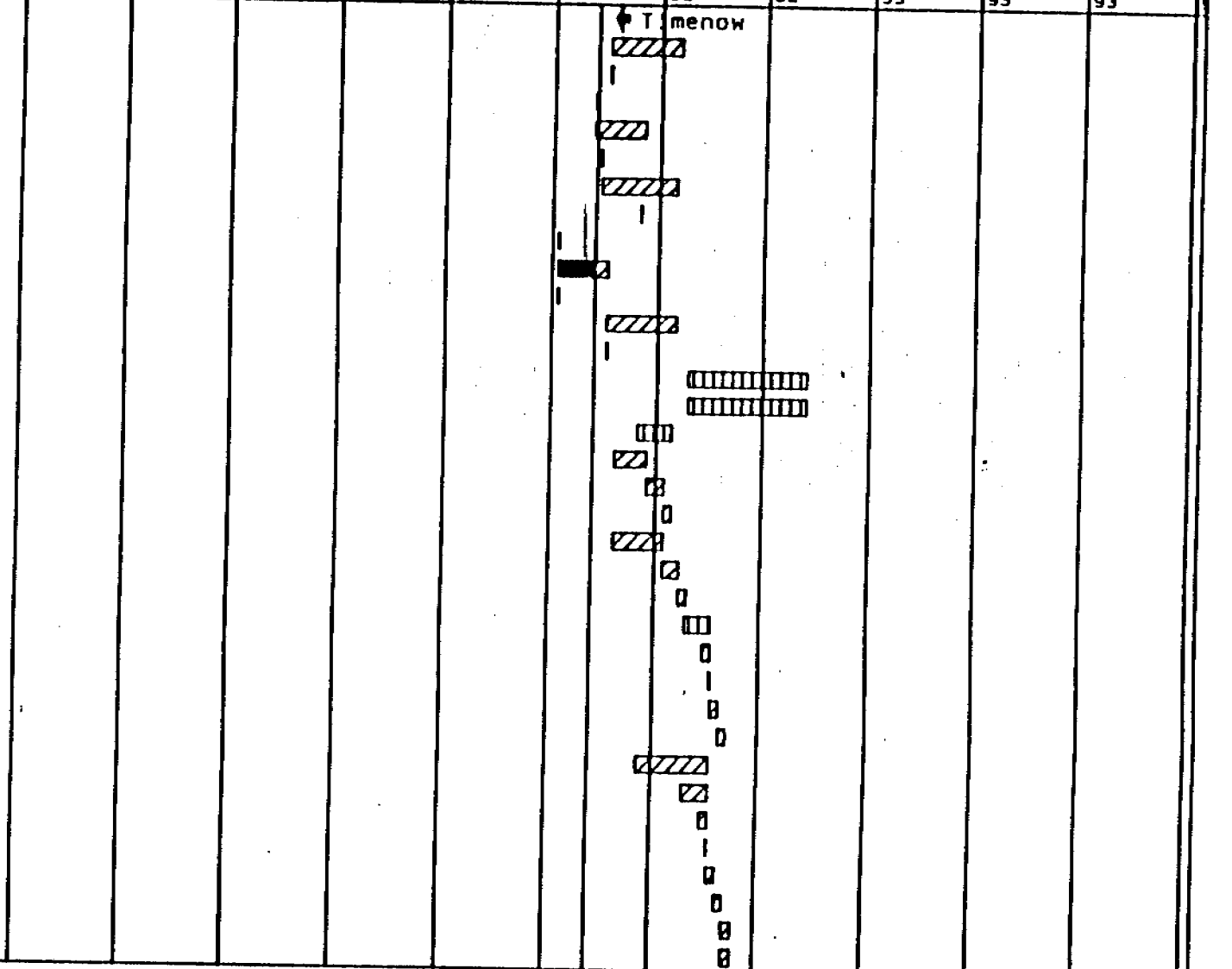
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
874	FAB/SHIP FLOCCULANT FEED SYS.	18MAY92	17JUL92	43
875	ISSUE P.O. FLOCCULANT FEED SYS	18MAY92	18MAY92	1
876	ISSUE RFQ NOZZLE FABRICATOR	06MAY92	06MAY92	1
877	FINALIZE BID TAB NOZZLE FAB.	06MAY92	17JUN92	30
878	ISSUE LETTER NOZZLE FABRICATOR	11MAY92	11MAY92	1
879	FAB/SHIP NOZZLE FABRICATOR	12MAY92	15JUL92	45
880	ISSUE P.O. NOZZLE FABRICATOR	15JUN92	15JUN92	1
881	ISSUE RFQ MOTOR CONTROL CENTER	06MAY92	06MAY92	1
882	FINALIZE BID TAB MOTOR CONTROL	06MAY92	18MAY92	30
883	ISSUE LETTER MOTOR CONTROL	06MAY92	06MAY92	1
884	FAB/SHIP MOTOR CONTROL CENTER	18MAY92	16JUL92	42
885	ISSUE P.O. MOTOR CONTROL	18MAY92	18MAY92	1
1	EQPT RENTAL	28JUL92	07NOV92	88
1	EXPENSED EQPT	28JUL92	07NOV92	88
1	MOBILIZE ERECTION CREWS FOR	15JUN92	13JUL92	24
1	DRAFT OPRNS/CONTINGENCY PROCD	29MAY92	22JUN92	20
2	REVIEW OPRNS/CONTINGENCY PROC	23JUN92	07JUL92	10
3	FINAL OPRNS/CONTINGENCY PROCD	08JUL92	14JUL92	5
1	DRAFT SO TEST PROCEDURE	26MAY92	07JUL92	30
2	REVIEW SO TEST PROCEDURE	08JUL92	21JUL92	10
3	FINALIZE SO TEST PROCEDURE	22JUL92	28JUL92	5
4	ERECT EQUIPMENT FOR C POND	28JUL92	19AUG92	20
5	SO TEST - C POND/CLARIFIER	13AUG92	19AUG92	6
6	READY TO OPERATE C POND/CLARI	19AUG92	19AUG92	1
7	PILOT RUN C POND	20AUG92	26AUG92	6
8	VERIFY PRODUCT C POND	27AUG92	02SEP92	6
9	ASSIST. INSTALL/START-UP	18JUN92	19AUG92	53
A	ERECT EQUIPMENT FOR A&B PONDS	28JUL92	19AUG92	20
B	SO TEST FOR A/B PONDS	13AUG92	19AUG92	6
C	READY TO OPERATE A&B PONDS	19AUG92	19AUG92	1
D	PILOT RUN A&B PONDS	20AUG92	26AUG92	6
	VERIFY PRODUCT A&B PONDS	27AUG92	02SEP92	6
	NOTICE TO PROCESS A&B PONDS	02SEP92	10SEP92	6
	NOTICE TO PROCESS C POND/CLARI	02SEP92	10SEP92	6



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Bar Chart Key: Early Dates

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OPEN PLAN (R)

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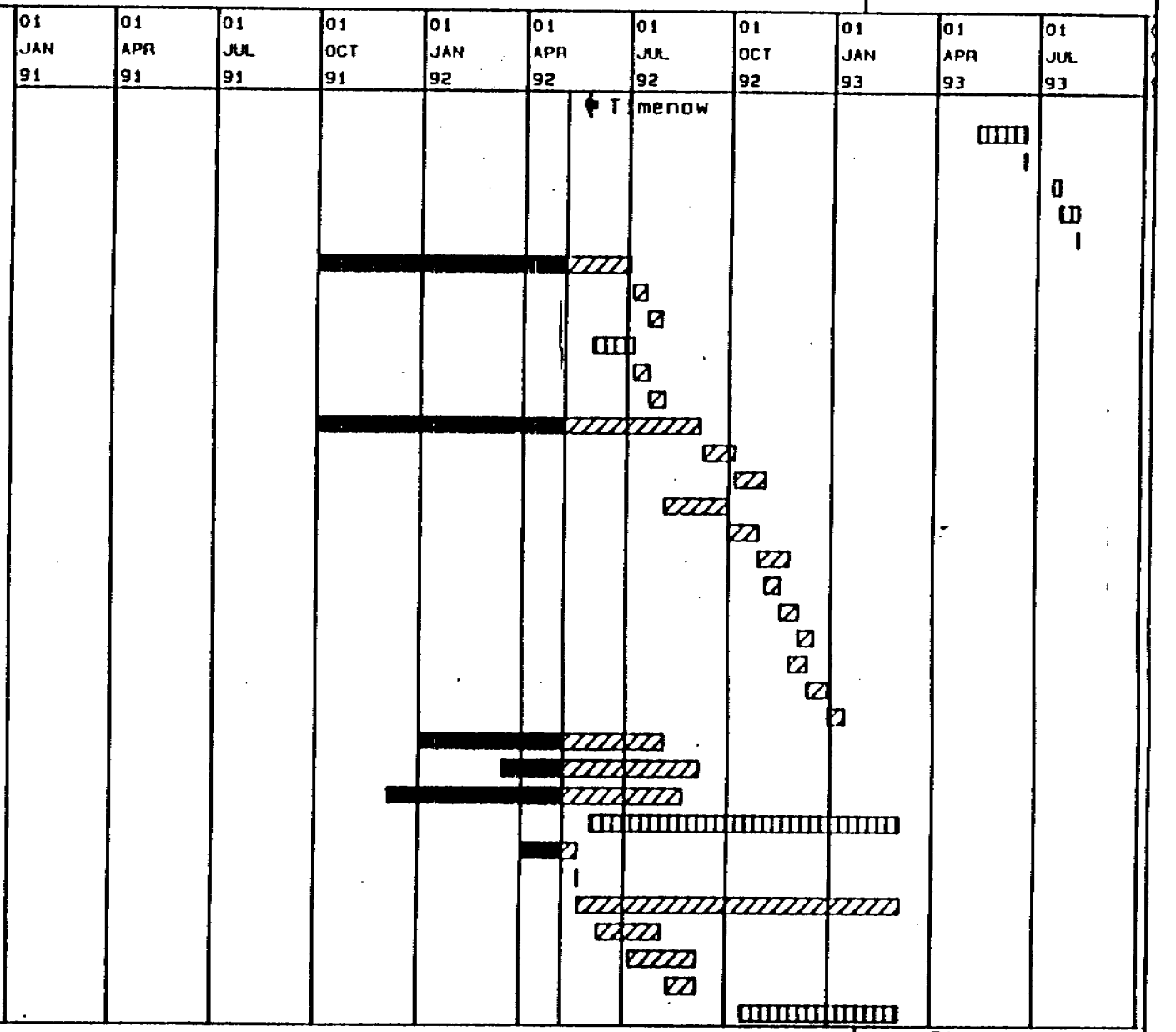
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
2	PROCESS PONDCRETE	08MAY93	19JUN93	35
3	PROCESSING COMPLETE	19JUN93	19JUN93	1
4	NOTICE TO PROCESS	14JUL93	20JUL93	6
5	PROCESS SALTCRETE	21JUL93	05AUG93	14
6	PROCESSING COMPLETE	05AUG93	05AUG93	1
B1	DEVELOP DESIGN CRITERIA	01OCT91	02JUL92	190
B2	REVIEW DESIGN CRITERIA	06JUL92	17JUL92	10
B3	FINALIZE DESIGN CRITERIA	20JUL92	31JUL92	10
C1	DEVELOP DESIGN CRITERIA	01APR92	06JUL92	25
C2	REVIEW DESIGN CRITERIA	07JUL92	20JUL92	10
C3	FINALIZE DESIGN CRITERIA	21JUL92	03AUG92	10
B3	DEVELOP DESIGN PACKAGE	01OCT91	04SEP92	235
B4	REVIEW DESIGN PACKAGE	08SEP92	05OCT92	20
B5	FINALIZE DESIGN PACKAGE	06OCT92	02NOV92	20
C3	DEVELOP DESIGN PACKAGE	04AUG92	29SEP92	40
C4	REVIEW DESIGN PACKAGE	30SEP92	27OCT92	20
C5	FINALIZE DESIGN PACKAGE	28OCT92	24NOV92	20
B1	ASSY FINAL INSTALLATION PKG	03NOV92	16NOV92	10
B2	REVIEW FINAL INSTALLATION PKG	17NOV92	02DEC92	10
B3	FINALIZE INSTALLATION PKG	03DEC92	16DEC92	10
1	ASSEMBLE INSTALLATION PKG	25NOV92	10DEC92	10
2	REVIEW INSTALLATION PKG	11DEC92	28DEC92	10
3	FINALIZE INSTALLATION PKG	29DEC92	12JAN93	10
1	INQUIRY EQPT & BLKS	01JAN92	03AUG92	150
2	FINALIZE BID TABS	15MAY92	04SEP92	122
3	ISSUE P.O.'S (EXCLUDE CRUSHER)	05DEC91	20AUG92	180
4	FAB/SHIP. EQPT & BLKS	01JAN92	02MAR93	190
90	PREPARE P.O. - PRIMARY CRUSHER	01MAY92	20MAY92	35
91	P.O. ISSUED - PRIMARY CRUSHER	21MAY92	21MAY92	1
92	FAB/SHIP PRIMARY CRUSHER	22MAY92	03MAR93	196
1	INQUIRY EQPT & BLKS	08JUN92	03AUG92	40
2	FINALIZE BID TABS	06JUL92	04SEP92	45
3	ISSUE P.O.'S EQPT & BLKS	10AUG92	04SEP92	20
4	FAB/SHIP 10 SITE EQPT & BLKS	15OCT92	03MAR93	95



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Bar Chart Key: Early Dates

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OPEN PLAN (TM)

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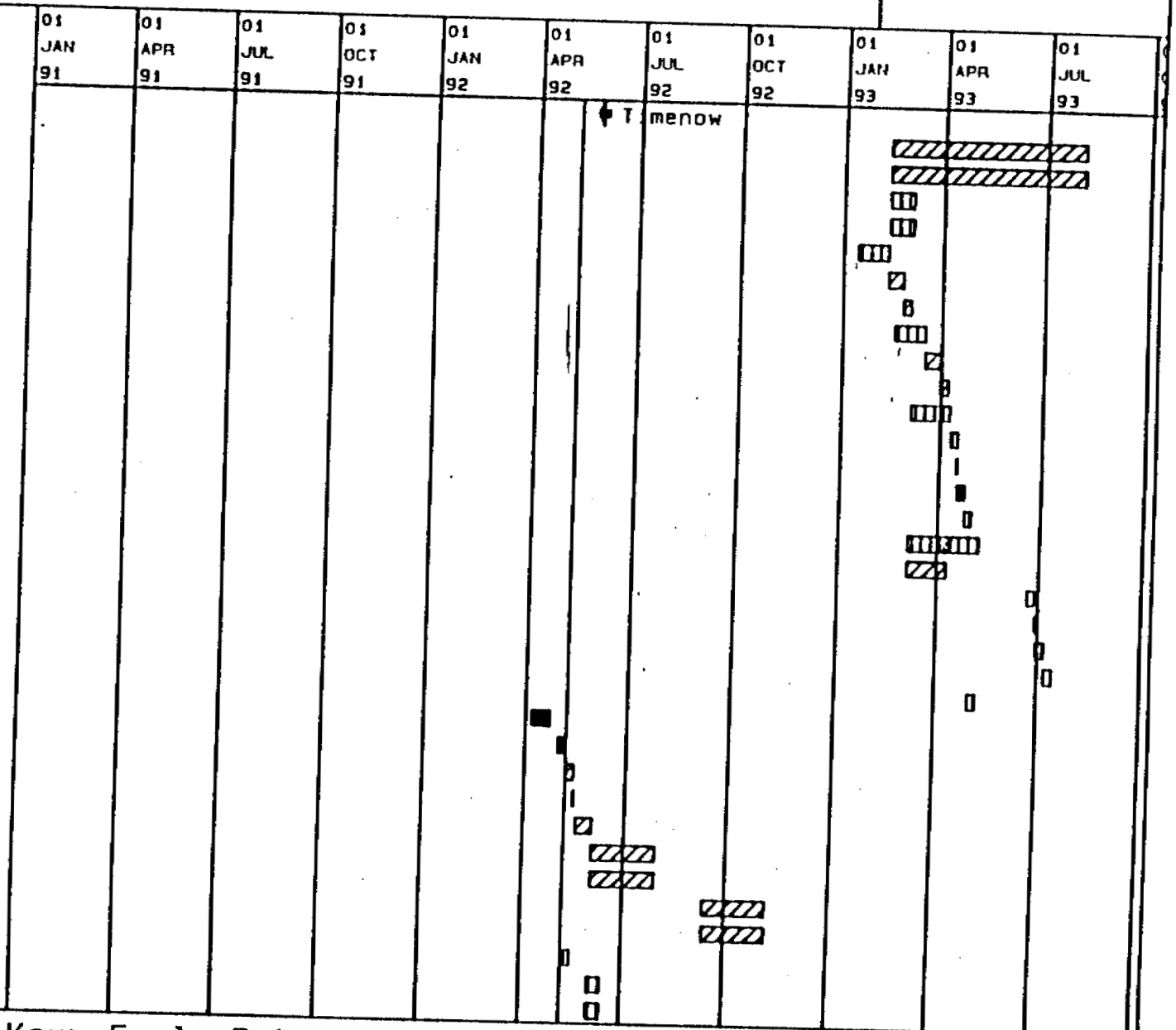
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
A 1	EQPT PROCUREMENT	12FEB93	03AUG93	145
B 1	EXTENDED EQPT	12FEB93	03AUG93	145
C-1	SITE PREP SUBDIVISION	12FEB93	08MAY93	18
C-2	FORM/POUR FOUNDATIONS	12FEB93	04MAY93	18
D-1	DRAFT OPRNS/CONTINGENCY PROCD	14MAY93	10FEB93	20
D-2	REVIEW OPRNS/CONTINGENCY PROC	11FEB93	24FEB93	10
D-3	FINAL OPRNS/CONTINGENCY PROCD	25FEB93	03MAY93	5
H-1	DRAFT SO TEST PROCEDURE	17FEB93	18MAY93	20
H-2	REVIEW SO TEST PROCEDURE	17MAY93	30MAY93	10
H-3	FINALIZE SO TEST PROCEDURE	31MAY93	05AUG93	5
H-4	EFFECT PONDCRETE EQPT	05MAY93	08AUG93	30
H 5	SO TEST PLANS	10MAY93	16AUG93	6
H 6	READY TO OPERATE	16AUG93	16AUG93	1
H-7	PILOT RUN	17AUG93	23AUG93	6
H 8	VERIFY PRODUCT	24AUG93	30AUG93	6
I 9	ASSIST: INSTALL/START-UP	05MAY93	07NOV93	54
K A	INSTALL EQPT	05MAY93	08AUG93	30
K B	LEAK TEST/SO TEST	21JUN93	26JUN93	6
K C	READY TO OPERATE	28JUN93	28JUN93	1
K D	PILOT RUN	29JUN93	06JUL93	6
K E	VERIFY PRODUCT	07JUL93	13JUL93	6
K X	NOTICE TO PROCESS	01MAY93	07MAY93	6
	BIDS DUE BACK / LEFCO SUBCONT	06APR92	22APR92	10
	EVALUATION / LEFCO SUBCONT	30APR92	07MAY92	10
	EG&G APPROVAL / LEFCO SUBCONT	08MAY92	14MAY92	5
	AWARD CONTRACT / LEFCO SUBCONT	15MAY92	15MAY92	1
	MOBILIZE/SITE / LEFCO SUBCONT	18MAY92	01JUN92	10
	CONSOLIDATE B SERIES PONDS	02JUN92	28JUL92	40
	EXCAVATION OF PONDS	02JUN92	28JUL92	40
	REMAIN SLUDGE - C POND/CLAY	11SEP92	05NOV92	40
	REMAIN SLUDGE FROM ASB PONDS	11SEP92	05NOV92	40
	APPROVAL OF GEN. ARRANGEMENT	11MAY92	15MAY92	5
	PROVIDE LOCKER, SHOWERS/LAVATORY	01JUN92	12JUN92	10
	PERFORM WHOLE BODY RAD/COUNT	01JUN92	12JUN92	10



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Bar Chart Key: Early Dates

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Project: ALTTEST
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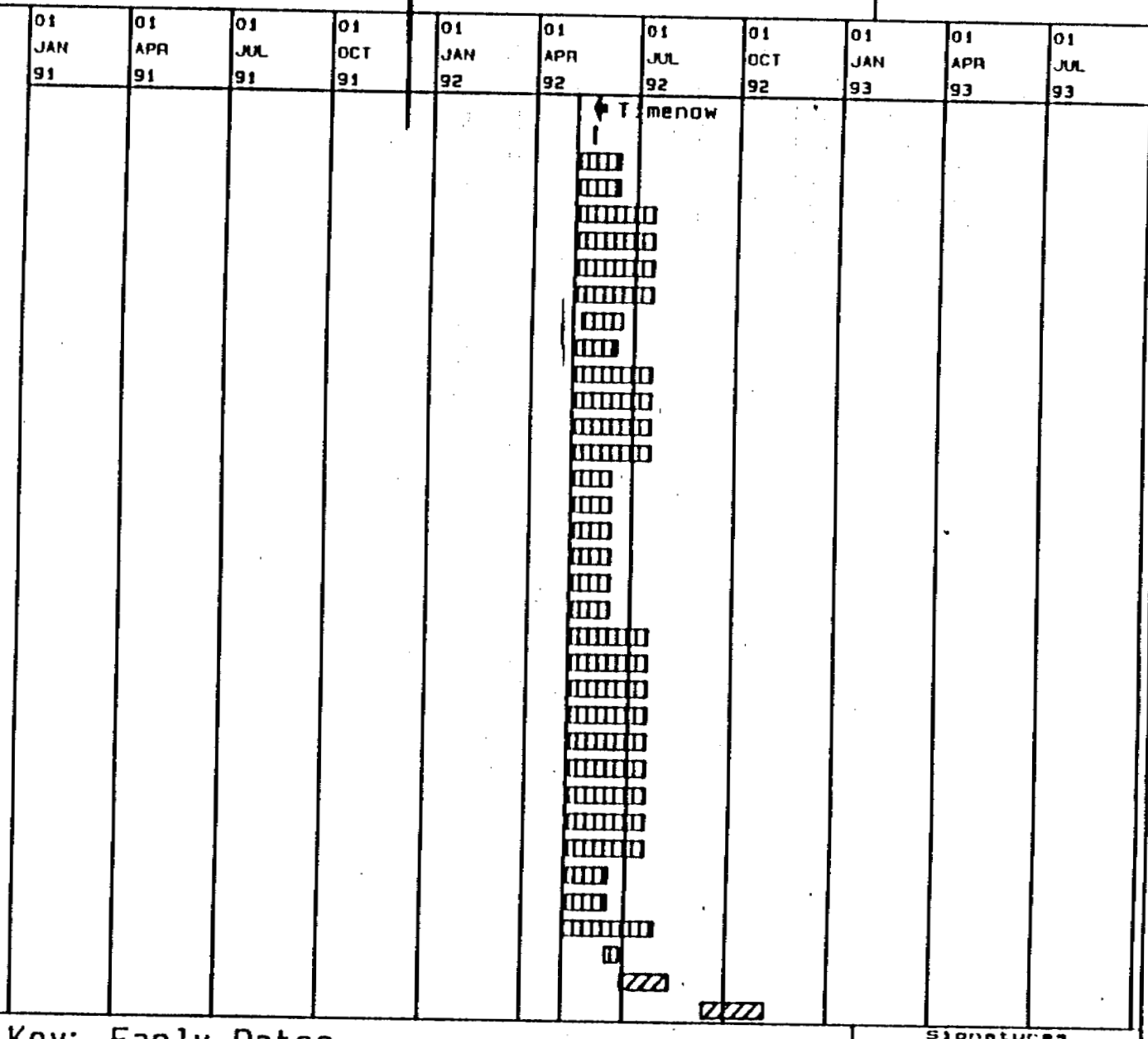
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

Activity	Description	Start	Finish	Dur
5	DEMO IN DUNCAN/C POND PROCESS	22MAY92	22MAY92	1
0	MOBILIZE MODULE TANK FOR PON	11MAY92	15JUN92	25
1	MOBILIZE MODULE TANK FOR BATCH	11MAY92	15JUN92	25
2	MOBILIZE MODULE TANK FOR BATCH	11MAY92	16JUL92	47
3	MOBIL MODULE #1 AVERAGING TANK	11MAY92	16JUL92	47
4	MOBIL MODULE #2 AVERAGING TANK	11MAY92	16JUL92	47
5	MOBIL MODULE TANK/CHLORINATION	11MAY92	16JUL92	47
6	MOBILIZE PON FOR DEMO RUN	15MAY92	19JUN92	25
	MOBILIZE PON A BATCH TANK	11MAY92	15JUN92	25
	MOBILIZE B BATCH TANK	11MAY92	16JUL92	47
	MOBILIZE #1 AVERAGING TANK	11MAY92	16JUL92	47
	MOBILIZE #2 AVERAGING TANK	11MAY92	16JUL92	47
	MOBILIZE CHLORINATION TANK	11MAY92	16JUL92	47
	SITE/STEP LEVEL AREA FOR PON	11MAY92	12JUN92	24
	SITE/STEP LEVEL AREA FOR A -	11MAY92	12JUN92	24
	SITE/STEP LEVEL AREA FOR B -	11MAY92	12JUN92	24
	SITE/STEP LEVEL AREA #1 AVERG	11MAY92	12JUN92	24
	SITE/STEP LEVEL AREA #2 AVERAG	11MAY92	12JUN92	24
	PREPARE AREA FOR CHLORINATION	11MAY92	12JUN92	24
	MOBILIZE 6 BAG BAGHOUSE	11MAY92	16JUL92	47
	MOBILIZE 10 BAG BAG HOUSE	11MAY92	16JUL92	47
	MOBILIZE GROUT LOOP PIPING	11MAY92	16JUL92	47
	MOBILIZE FLUSH LOOP	11MAY92	16JUL92	47
	MOBIL. CEMENT DUST COLLECTOR	11MAY92	16JUL92	47
	MOBILIZE BUSTER PUMP	11MAY92	16JUL92	47
	MOBILIZE LUMP SCREEN	11MAY92	16JUL92	47
	HOOKUP HEPA SYS TO 6 BAG HOUSE	11MAY92	16JUL92	47
	HOOKUP LIGHTS AT ROCKY FLATS	11MAY92	16JUL92	47
	MOBILIZE COMPRESSOR TO ROCKY	11MAY92	15JUN92	25
	MOBILIZE GENERATOR TO ROCKY	11MAY92	15JUN92	25
	MOBILIZE COMMUNICATIONS SYSTEM	08MAY92	21JUL92	55
	MOBILIZATION/SITE PREPARATION	15JUN92	26JUN92	10
	TRIAL RUN ON PROCESS EQUIPMENT	29JUN92	10AUG92	30
	PREPARATION OPERATING EQUIP.	11SEP92	09NOV92	48



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Bar Chart Key: Early Dates

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OPEN PLAN (D)

DATE: BASELINE
PROJECT: ALT2TEST
FROM: 08MAY92
TO: 20AUG92
RUN: 15:55 12
BY: JJ

ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

ivity	Description	Start	Finish	Dur
NG	/DESIGN FAC CONFIGURATION	01APR92	07MAY92	22
NG.	/DESIGN EQUIP. SELECTION	01MAY92	14MAY92	10
	ENERGY NEEDED DENSIMETER	11MAY92	15JUN92	25
NG	/DESIGN GEN. WIRING DRW	11MAY92	11MAY92	1
NG	/DESIGN DEMO COORDINATION	11MAY92	01JUN92	15
NG	/DESIGN COMMUNICATIONS SYS	22MAY92	12JUN92	15
IE	PREP. - LEVEL TANK AREA	22MAY92	12JUN92	15
VE	THROUGHOUT TRUCK /EQUIP	22MAY92	12JUN92	15
VE	SECTION/FENCE SE CORNER	22MAY92	12JUN92	15
IE	PREP. MOVE VACUUM TRUCK	22MAY92	12JUN92	15
COLD	ROOM SET UP ON SITE	15MAY92	29MAY92	10
MOVE	PERMACON IN TENT 6	15MAY92	29MAY92	10
CON	/OB PREPARED FOR ON SITE	01JUN92	12JUN92	10
JCE	CONSTRUCTION TRAILER	15MAY92	29MAY92	10
IE-	PREP. BURY 8" PIPE/20/C	08MAY92	17JUL92	49
IE	PREP. CONSTRUCT PIPE LINE	15JUN92	31JUL92	34
IE	PREP. PREPARE AND INSTALL	01APR92	01JUN92	42
AK	CHECK ON DEMO EQUIPMENT	15JUN92	15JUN92	1
.D	TEST FOR DEMO EQUIPMENT	23JUN92	23JUN92	1
I	TEST FOR DEMO EQUIPMENT	24JUN92	30JUN92	5
BILIZE	/RIG UP NOZZLE, TANKS	09JUL92	22JUL92	10
BILIZE	/RIG UP FIELD STORAGE	23JUL92	07AUG92	12
BILIZE	/RIG UP BULK MATERIALS	22JUL92	31JUL92	8
BILIZE	/RIG UP INSTRUMENTS	23JUL92	07AUG92	12
BILIZE	/RIG UP BATCH TANKS	23JUL92	29JUL92	5
RSONNEL	- ISSUE REQUISITIONS	20APR92	07MAY92	10
RSONNEL	- TRAIN DEMO PERSONNEL	01JUN92	12JUN92	10
CO	TRAINING OF PERSONNEL	15MAY92	29MAY92	10
RSONNEL	- TRAIN OPERATIONAL	08MAY92	26MAY92	12
DE	FLY OPERATIONAL POZZOLAN	15MAY92	05JUN92	15
LECT	SUFFICIENT C POND	01JUN92	05JUN92	5
L	ICATION FOR APLN ON DEMO	20APR92	07MAY92	10
L	ICATION FOR OPERAT. / APLN	20APR92	01JUN92	30
OPERATION	OF PONDS A, B, C	01JUN92	10SEP92	72

01 JAN 91	01 APR 91	01 JUL 91	01 OCT 91	01 JAN 92	01 APR 92	01 JUL 92	01 OCT 92	01 JAN 93	01 APR 93	01 JUL 93

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Bar Chart Key: Early Dates

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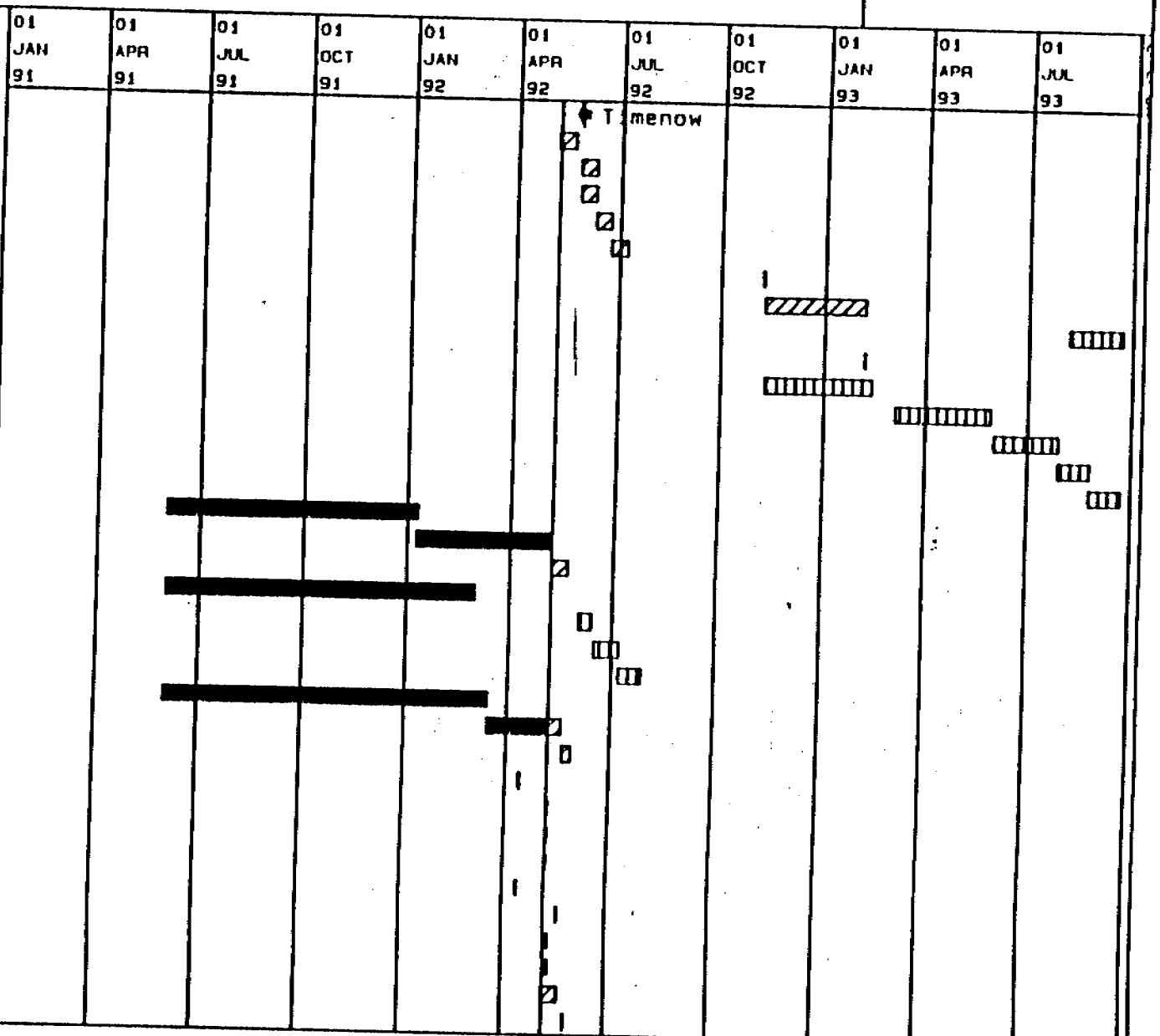
ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

tivity	Description	Start	Finish	Dur
	...VALIDATION FOR PARTICULATE	06MAY92	20MAY92	11
	...PLANT DEMOBILIZATION PLAN	26MAY92	08JUN92	10
	...MOVE TO DEMOBILIZATION PLAN	26MAY92	08JUN92	10
	...CHEN DEMOBILIZATION PLAN	09JUN92	22JUN92	10
	...ANALYZE DEMOBILIZATION PLAN	23JUN92	07JUL92	10
	...DANCE DEMOBILIZATION	07NOV92	07NOV92	1
	...COMMISSION POND/SLUDGE EQPT	09NOV92	05FEB93	60
	...COMMISSION POND/SALT CRETE	06AUG93	22SEP93	40
	...CONTRACTORS DEMOBILIZED	05FEB93	05FEB93	1
	...STACK 750 PAD/MOVE 904 CRATE	09NOV92	11FEB93	64
	...FAVE TO FINAL REPORT	05MAY93	28MAY93	60
	...AFT FINAL REPORT	01JUN93	27JUL93	40
	...VIEW FINAL REPORT	28JUL93	24AUG93	20
	...ANALYZE FINAL REPORT	25AUG93	22SEP93	20
	...AFT SITE-SPECIFIC Q/A PLAN	01JAN91	09JAN92	50
	...VIEW SITE-SPECIFIC Q/A PLAN	09JAN92	07MAY92	81
	...AL SITE-SPECIFIC Q/A PLAN	08MAY92	21MAY92	10
	...AFT HEALTH/SAFETY PLAN	01JAN91	01JAN92	40
	...AFT HEALTH/SAFETY PLAN	01JAN92	12JUN92	10
	...VIEW HEALTH/SAFETY PLAN	15JUN92	06JUL92	15
	...AL HEALTH/SAFETY PLAN	07JUL92	27JUL92	15
	...AFT HEALTH/SAFETY PLAN	01JAN91	14MAY92	40
	...VIEW HEALTH/SAFETY PLAN	15MAY92	18MAY92	45
	...ANALYZE HEALTH/SAFETY PLAN	20MAY92	27MAY92	5
	...ROVAL/TRAINING/PLAN FOR EGG	13NOV92	13NOV92	1
	...P/OPERATION SAFETY ANALYSES	08MAY92	08MAY92	1
	...LECTION/ADDITIONAL SITE/EQUIP	08MAY92	08MAY92	1
	...LECTION/ADDITIONAL SITE/EQUIP	08MAY92	08MAY92	1
	...TRAINING/DRILLS/LEECO/DIRECT	13NOV92	13NOV92	1
	...EXPERT PROVISION FOR HEALTH	19MAY92	19MAY92	1
	...PROCESS FLOW DIAGRAMS	11MAY92	11MAY92	1
	...EQUIPMENT FOOT PRINTS	11MAY92	11MAY92	1
	...MANPOWER/OPER.H/TASKS	07MAY92	20MAY92	10
	...SHEETS/FOR EACH MATERIAL	20MAY92	20MAY92	1



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ROCKY FLATS SOLAR PONDS / PONDCRETE/SALT

ivity	Description	Start	Finish	Dur
	OMY & FOOT PERSONNEL COUNT	01JAN92	12JAN92	10
	E OF OSHA 40HR. TRAINING	29JAN92	29JAN92	1
	YSICIAN'S FIT FOR WORK STATE	29JAN92	29JAN92	1
	PLETION/REQUIRED EGG TRAIN/	08MAY92	08MAY92	1
	L/IDENTIFICATION/EGG TRAIN/	08MAY92	08MAY92	1
	IN PROCESS FLOW DIAGRAMS	08MAY92	08MAY92	1
	AL EQUIPMENT FOOT PRINTS	08MAY92	08MAY92	1
	AL WARFARE/OPERATION PLANS	08MAY92	08MAY92	1
	S SHEETS FOR MATERIALS USED	08MAY92	08MAY92	1
	DONATION/SITE INS OFFICER	08MAY92	08MAY92	1
	OF OSHA 40HR. TRAINING	08MAY92	08MAY92	1
	RETARY'S FIT FOR WORK STATE	08MAY92	08MAY92	1
	PLETION/REQUIRED EGG TRAIN/	11MAY92	11MAY92	1
	EEZE CHAR SAMPLING PLAN	11NOV91	03MAY91	20
	ECT CHAR SAMPLES	06MAY91	24MAY91	15
	YZE SAMPLES	28MAY91	20JUN91	12
	IVE MISSION ANALYSIS (OPT	26JUL91	26JUL91	1
	T CHAR REPORT	20JUN91	25JUL91	15
	IN MISSION CHAR REPORT	29JUL91	10AUG91	5
	R TO SHIP SAMPLES	13APR91	14APR91	1
	PSOIL SAMPLES TO MISSION	15APR91	19APR91	5
	ION ANALYSIS	20APR91	01MAY91	10
	NATE REPORT	06MAY91	06JUN91	20
	MISSION ANALYSIS REPORT	13JUN91	13JUN91	1

01 JAN 91 | 01 APR 91 | 01 JUL 91 | 01 OCT 91 | 01 JAN 92 | 01 APR 92 | 01 JUL 92 | 01 OCT 92 | 01 JAN 93 | 01 APR 93 | 01 JUL 93

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Bar Chart Key: Early Dates

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REQUIRED CHANGES TO THE ROCKY FLATS SOLAR POND PROJECT
PHASE II STATEMENT OF WORK DATE 8/04/92

Page	Section	Line	Change
3	2.2	-	Delete this definition
3	2.3	2	Delete "Design Criteria" through "specification of"
3	2.4	1	After "(PCP)" insert "is revision 3, dated _____ and"
3	2.4	3	Delete "which ensure" through "produced"
3	2.4	4	Delete "will be a" through "the PCP"
4	2.4	3	Change "approved PCP" to "PCP operating parameters"
4	2.5	-	Add the following to the end of the section.. "Contractor will direct subcontractor to either standby or demobilize operating personnel during these periods
4	3.1	1	Delete "all of"
4	3.1	1	Delete "crystal,"
4	3.1	4	Change "which exist" through "Task 1" with "as defined in the Material Volume Memorandum dated 9-4-92"
4	3.2	1	Delete "all"
4	3.2	3	After "B series" insert "as defined in the Material Volume Memorandum dated 9-4-92 "
5	4.1	2	Change "all" to "the"
5	4.1	3	After the first "materials" insert "listed in Attachment A to this SOW"
5	4.1	8	Delete "approved" through standards of the"
5	4.2	2	Change "site procedures" to "the PCP"
7	5.	1	Delete first line
7	5.	2	Change "for" to Performance of"
7	5.	2	After "2." insert "shall commence"
8	6.	3	After "trains" insert "for the periods listed below"
8	6.	3	Delete "using the" through the end of the sentence
8	6.	-	Insert at the end of the section:

Operating Periods

Task 1 - C Ponds/Clarifier	45 double shift days
	22 single shift days
Task 2 - A & B Ponds	25 double shift days
	52 single shift days

9	6.1	2	Delete "or as directed in writing by Contractor"
9	6.1	4	Delete "Labor Day"

REQUIRED CHANGES TO THE ROCKY FLATS SOLAR POND PROJECT
PHASE II STATEMENT OF WORK DATE 8/04/92

Page	Section	Line	Change
9	6.1	5	Add "s" to "holiday"
11	6.4	3	Delete "subcontractor" through "November 8, 1992"
13	8.8	-	Add the following to the end of the section "Subcontractor will notify contractor when sufficient radiation workers are not available"
14	9.2	2	Change "by the PCP, and Section 4.1 of the SOW" to "in Attachment A to this SOW"
14	9.4	3	Delete "and Operating Instructions"

Attachment A

POZZOLAN VOLUME USAGE

Task 1 - C Pond Processing

Description	Quantity	Unit
Cement	1,841	TN
Flyash	3,682	TN
Lime	138	TN
Plasticizer	12,000	LBS

Task 2 - A/B Pond Processing

Description	Quantity	Unit
Cement	856	TN
Flyash	1,712	TN
Lime	66	TN
Plasticizer	15,804	LBS

ASSUMPTIONS FOR GUARANTEE PRICING

1. Assume 3% reject rate for crates produced outside of operating parameters.

C Pond/Clarifier	4,882 crates x .03 =	146 crates
A/B Ponds	2,304 crates x .03 =	69 crates
	TOTAL RESULTS	215 CRATES

2. Basis for materials used during PHASE III processing of PHASE II rejects derived from RF-HED-92-0365 (June 23, 1992) concerning material purchase orders.

Initial Material 215 Crates x 4,300 Lbs./Crate = 924,500 Lbs. (Assume 100% solids)

Slurry to 60% Solids $\frac{924,500}{.6}$ Lbs. = 1,541,000 2 Lbs. Solids & Water

Water Content 0.4 x 1,541,000 = 616,000 Lbs. Water

Cementing $\frac{616,000}{.42}$ Lbs. Water = 1,467,000 Lbs. Total Pozzolans

Cement : Fly Ash : Lime = 1:2: .075

1,467,000 Lbs. x 1/3.075 = 477,000 Lbs. Cement
1,467,000 Lbs. x 2/3.075 = 954,000 Lbs. Fly Ash
1,467,000 Lbs. x .075/3.075 = 35,800 Lbs. Lime

PRICING

477,000 Lbs. Cement	x $ 69.80/Ton x 1/2000 =	$16,650.00
954,000 Lbs. Fly Ash	x $ 32.00/Ton x 1/2000 =	15,300.00
35,800 Lbs. Lime	x $142.60/Ton x 1/2000 =	2,600.00

BLENDING

733 Tons x $129.05/Ton =	95,000.00
TOTAL	$129,550.00

3. Basis for labor costs associated with PHASE III processing of PHASE II rejects.

Half crates produced from PHASE II rejects:

215 Crates x 1.44* = 310 Crates

* 1.44 volume expansion based on 60% solids slurry processing taken from BAR memo dated January 11, 1991 (File 765.2)

Manpower ratio from material handling study dated September, 1991 (DELIVERABLE NO. 412)

Crew = Pondcrete/Saltcrete/Pondsludge = 55/57 = 0.96

Labor Costs/Box Produced from new PHASE II estimate (without guarantee price) - Average of all waste forms.

1,313 Crates

TOTAL LABOR PRICE

215 Crates x .96 x 1,313 Crates = $276,000.00

DIRECT COST GUARANTEE PRICE

Materials	$129,500.00
Labor	271,000.00
TOTAL	$400,550.00

CLIENT: EG & G – ROCKY FLATS
PROJECT: PHASE II RE-BID – SOLAR PONDS PROCESSING
LOCATION: GOLDEN, COLORADO

ASK 1 – 207 C POND WBS ACCOUNT NUMBER DESCRIPTION	UNIT	QTY	CREW HRS	UNIT COSTS						TOTAL COSTS					
			MH'S	LABOR	MATL	EQE	EQUIP	SUB	TOTAL	LABOR	MATL	EQE	EQUIP	SUB	TOTAL
10 – POZZOLAN BLENDING SERVICES															
HALLIBURTON SERVICES (8/25 – Rev.):															
Blending Services	LS	1						456,889.00	456,889.00					456,889	456,889
OTAL DIRECT COST	LS	1												456,889	456,889

5 OF 167

CLIENT: EG & G - ROCKY FLATS
PROJECT: PHASE II RE-BID - SOLAR PONDS PROCESSING
LOCATION: GOLDEN, COLORADO

SK 1 - 207 C POND WBS ACCOUNT NUMBER DESCRIPTION	UNIT	QTY	CREW HRS MH'S	UNIT COSTS LABOR	MATL	EQE	EQUIP	SUB	TOTAL	TOTAL COSTS LABOR	MATL	EQE	EQUIP	SUB	TOTAL
- 207C PROCESSING															
ALLIBURTON SERVICES (8/25 - Rev.):															
rocess Train Operation	LS	1						1,054,541.00	1,054,541.00					1,054,541	1,054,541
FCO (Orwig - Aug 12, '92):															
xcavation, Feed Process	DAYS	83						7,060.00	7,060.00					585,980	585,980
ONTAINMENT BLADDERS	EA	5,882			19.00				19.00		111,758				111,758
AL DIRECT COST	LS	1									111,758			1,640,521	1,752,279

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CLIENT: EG & G – ROCKY FLATS
PROJECT: PHASE II RE-BID – SOLAR PONDS PROCESSING
LOCATION: GOLDEN, COLORADO

ASK 1 – 207 C POND WBS ACCOUNT NUMBER DESCRIPTION	UNIT	QTY	CREW HRS	UNIT COSTS						TOTAL COSTS					
			MH'S	LABOR	MATL	EOE	EQUIP	SUB	TOTAL	LABOR	MATL	EOE	EQUIP	SUB	TOTAL
30 – POZZOLAN BULK MATERIALS															
TYPE V PORTLAND CEMENT	TN	1,841			69.06				69.06		127,139				127,139
CLASS C FLYASH	TN	3,682			32.00				32.00		117,824				117,824
HYDRATED LIME	TN	138			145.05				145.05		20,017				20,017
SUPER-RETARDER – .1%	TN	6			10,500.00				10,500.00		63,000				63,000
TOTAL DIRECT COST	TN	6,667									327,980				327,980
UNIT COSTS											57.88				57.88

57AA67

CLIENT: EG & G - ROCKY FLATS
PROJECT: PHASE II RE-BID - SOLAR PONDS PROCESSING
LOCATION: GOLDEN, COLORADO

SK 2 - 207 A/B POND WBS ACCOUNT NUMBER DESCRIPTION	UNIT	QTY	CREW HRS	UNIT COSTS						TOTAL COSTS					
			MH'S	LABOR	MATL	EOE	EQUIP	SUB	TOTAL	LABOR	MATL	EOE	EQUIP	SUB	TOTAL
0 - POZZOLAN BLENDING SERVICES															
IALLIBURTON SERVICES (8/25 - Rev.):															
Blending Services	LS	1						364,638.00	364,638.00					364,638	364,638
TAL DIRECT COST	LS	1												364,638	364,638

5404K7

CLIENT: EG & G – ROCKY FLATS
PROJECT: PHASE II RE-BID – SOLAR PONDS PROCESSING
LOCATION: GOLDEN, COLORADO

ASK 2 – 207 A/B POND WBS ACCOUNT NUMBER DESCRIPTION	UNIT	QTY	CREW HRS MH'S	UNIT COSTS LABOR	MATL	EOE	EQUIP	SUB	TOTAL	TOTAL COSTS LABOR	MATL	EOE	EQUIP	SUB	TOTAL
10 – 207A/B PROCESSING															
HALLIBURTON SERVICES (K – 8/27 *):															
Process Train Operation	LS	1						530,388.00	530,388.00					530,388	530,388
QUALTEC, INC. (K – 8/27 *):															
Pugmill Operation	LS	1						321,000.00	321,000.00					321,000	321,000
EFCO (K – 8/27 *):															
Pond Reclaim	LS	1						414,646.00	414,646.00					414,646	414,646
* TASK 2 – WBS 210 BACKUP ESTIMATE.															
TOTAL DIRECT COST	LS	1												1,266,034	1,266,034

5508167

CLIENT: EG & G – ROCKY FLATS
PROJECT: PHASE II RE-BID – SOLAR PONDS PROCESSING
LOCATION: GOLDEN, COLORADO

TASK 2 – 207 A/B POND WBS ACCOUNT NUMBER DESCRIPTION	UNIT	QTY	CREW HRS	UNIT COSTS						TOTAL COSTS					
			MH'S	LABOR	MATL	EOE	EQUIP	SUB	TOTAL	LABOR	MATL	EOE	EQUIP	SUB	TOTAL
230 – POZZOLAN BULK MATERIALS															
TYPE V PORTLAND CEMENT	TN	856			69.06				69.06		59,115				59,115
CLASS C FLYASH	TN	1,712			32.00				32.00		54,784				54,784
HYDRATED LIME	TN	66			145.05				145.05		9,573				9,573
TOTAL DIRECT COST	TN	2,634									123,472				123,472
UNIT COSTS											46.88				46.88

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TASK 2 - 207 A/B POND WBS 210 BACKUP DESCRIPTION	UNIT	QTY	CREW HRS MH'S	UNIT COSTS LABOR	MATL	EOE	EQUIP	SUB	TOTAL	TOTAL COSTS LABOR	MATL	EOE	EQUIP	SUB	TOTAL
210 - 207 A/B PROCESSING															
RECAPITULATION															
POND RECLAIM (LEFCO SUBCONTRACT)														414,648	414,648
PUGMILL OPERATION (QUALTEC SUBCONTRACT)														321,000	321,000
HALLIBURTON SERVICES (ESTIMATED):															
SURGE TANKS, TRANSFER SUMP OPERATION										49,074	22,466				71,540
FLOCCULANT FEED, STATIC MIXER, ROTARY SCREEN THICKENER, SLURRY SURGE TANK OPERATION										51,473	110,466				161,939
CEMENT FLUSH, PROCESS WATER, DIRTY WATER SEPARATOR										51,473	22,466				73,939
DCS OPERATION										51,998	24,966				76,964
PUMPING OPERATION										51,998	22,466				74,464
BULK REAGENT STORAGE HANDLING										49,074	22,466				71,540
Subtotal										305,090	225,296				830,386
TOTAL DIRECT COST (TASK 2 - WBS 210)	LS	1								305,090	225,296			735,648	1,266,034

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TASK 2 – 207 A/B POND WBS 210 BACKUP DESCRIPTION	UNIT	QTY	CREW HRS MH'S	UNIT COSTS LABOR	MATL	EOE	EQUIP	SUB	TOTAL	TOTAL COSTS LABOR	MATL	EOE	EQUIP	SUB	TOTAL
210 – 207 A/B PROCESSING, CONT'D.															
PUGMILL OPERATION (QUALTEC SUBCONTRACT):															
	WKS	15													
	WD'S	90													
	HRS	1,200													
SUBCONTRACT:															
QUALTEC PUGMILL OPERATION	WKS	15						21,400.00	21,400.00					321,000	321,000
MATERIALS:															
NONE															
EQUIPMENT:															
PUGMILL	WKS	15													
OTHER COSTS:															
PER DIEM – Included In Weekly Rate															
LODGING – Included In Weekly Rate															
TRAVEL – Included In Weekly Rate															
PUGMILL DEMOBILIZATION	LS	1													
TOTAL DIRECT COST	LS	1												321,000	321,000

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SECTION II
PROJECT ASSUMPTIONS

GENERAL

1. The C Pond & A/B Processing will be done in series (Non-concurrent)

2. The waste processing for C Pond/Clarifier will be performed on a double shift operation six days per week (overlapping 19 hour day - 2 each - 10 hour shifts). Waste processing for A/B Pond will be on the same basis.

3. The current SOW requires HNUS to perform maintenance of equipment (normal, repairs, retrofits) with RAD Trained Personnel - added requirement.

4. The following deliverable documents should form the basis of your proposal:

   Waste Analysis Plan - Draft 0 - July 14, 1992 with meeting notes 7-17-92.

   PCP - Draft 2

   Operating Instructions - Draft 0

   Statement of Work - Draft 0 - July 20, 1992

   Process Design Criteria 207C & Clarifier Issue B - May 1, 1992

   Process Design Criteria 207 A/B - Issue B - May 1, 1992

   Copies are provided in this package as attachments.

5. The following draft Statement of Work (SOW) dated 7/20/92 should be used to define basic scope issues. We have incorporated a new page (page 5 & 6) which transfers the responsibility for equipment repairs to HNUS. HNUS will provide a RPT Supervisor for each shift to oversee the safety of the repairs. Mechanics should be included in the cost proposal.

6. Quantities of materials to process are based on surveys taken on May 7, 1992. These will form a basis for all half crate calculations, reagent calculations and durations of operations.

7. All Equipment Rentals during waste processing will be costed to Phase I.

8. All fuel (diesel) will be provided by EG&G during waste processing. Costs for oil, grease, general maintenance supplies should be costed to Phase II.

9. Major equipment repairs will be costed to Phase I - replace pump etc. Labor for performing on-site repairs to be included in Phase II.

SECTION 2.A
PROJECT ASSUMPTIONS

GENERAL, continued

10. Labor rates utilized on all Staffing Plan sheets include 5% escalation.

11. Staffing Plan hours indicate only applicable hours chargable to Phase II. Balance of hours to complement a full week are costed in Phase I.

12. Overhead and Corporate G&A multipliers are based on Halliburton NUS Internal Correspondence dated April 15, 1992.

13. Overhead, Corporate G&A and Fee have not been applied to Halliburton NUS Laboratory Services Group (LSG) costs.

14. Proposal includes four (4) Holiday costs for 207 C Pond and three (3) Holiday costs for 207 A/B Pond processing.

15. All terms and conditions as stated within "Agreement in Concept" shall be applicable to this proposal.

16. All associated costs for equipment installation, checkout and startup is is included in Phase I.

17. All mobilization and demobilization costs associated with Pond Processing are costed in Phase I.

18. Costs for personnel and equipment decontamination are included in Phase I.

19. All consumable materials and utility costs are included in Phase I costs, with the exception of reagent and retarder blending agents.

20. Proposal excludes any and all Federal, State, Local and Use Taxes on any purchased commodities.

21. Performance and Payment Bond is not included in this proposal.

~~SECTION III~~

POND 207 C/CLARIFIER ASSUMPTIONS

1. Work will be performed on a double shift basis (19 hours/day) for majority of processing. Processing will be performed on a 6 Day Basis.

2. Single Shift Operation will be performed during final cleanup. Final cleanup will be determined to be the period when part of the pond bottom is exposed. C Pond has a sloping bottom (1 foot change plus sump).

3. E&G& will be responsible for final cleanup of pond.

4. C Pond & Clarifier material will be blended in Averaging Tank ? and #3 and processed as one waste. ? check with Arnie

5. Brine water from C Pond will be used as makeup water for chlorination of the C Pond/Clarifier Material.

6. Fresh Water will be added to the pond to facilitate crystal dissolution.

7. 3% Entrained Air is assumed to be in the final contents of the half crate.

8. Inventory of C Pond is 550,534 gallons based on May 7 ~~1~~ 92 level.

9. EG&G will add 25,000 gallons of water for final cleanup of Pond.

10. Clarifier consists of 20,000 gallons of solid slurry and 5,000 gallons of 5.9% TDS water.

11. Usable storage within half crate is 38 cubic feet. Theoretical maximum is 41.6 cubic feet. Maximum weight of half crate is 4750 pounds including the 380 pound container. Bulk density of material measured has been between 105-114 pounds/cubic foot.

12. EG&G will man the casting station and conveyor system per the SOW Section 8.2 and 8.3.

13. Any oversize crystals (>10 mesh) will be screened and stored in half crates for processing during Phase III Saltcrete processing.

C POND CLARIFIER

From May 7 Survey and Laboratory Data from June 18, 1992

Sample

1. Approximately 152,000 gallons of water is required to dissolve crystals and lower TDS to 35%.

2. Inventories of C Pond/Clarifier are based on May 7 Survey.

	CEMENT	FLYASH	LIME
Total Reagents	3,504,200 #	7,008,441 #	262,817 #
Allowance for Reject Crates Outside Operating Parameters - 3% of Total	105,126 #	210,253 #	7,884 #
Blending Losses During Blending Operations - 2% of Total	72,187 #	144,373 #	5,414 #
Total for C Pond/Clarifier	3,681,533	7,363,067	276,115
TOTAL REAGENTS	11,320,715 # = 5660 TONS		

1,841- 3,682- 138-

~~ROCKY FLATS/EG&G SOLAR POND PROCESSING~~
A&B POND PROCESSING

~~PRELIMINARY COST ESTIMATE, PHASE II~~
~~REV. 1, AUGUST 26, 1992~~

CLARIFICATIONS/ASSUMPTIONS:

Based on A&B Pond Processing Assumptions, Rev 1, August 7, 1992 (attached), CCH additions at 20 Tons, maximum amounts per latest calculations would be approximately 25 Tons.

Reclaim subcontract prices (Lefco, Inc.) based on unit prices quoted.

Pugmill subcontract prices (Qualtec, Inc.) as extrapolated from latest proposal. Not audited nor negotiated based on new schedule.

Halliburton Services prices based on unit costs as supplied by Jeff Neal. Reagent costs not included in this cost estimate section.

Flocculent prices per telephone unit cost quotations. Quantities based on latest known usage requirements.

Halliburton Services Class "C" Flyash Retarder estimated at .3% of total pozzolan requirements. Capital equipment requirements per Pat Saunders of Halliburton Services.

No equipment costs, equipment rental costs, maintenance costs, replacement parts costs, FOG included; assumed to be in Phase I costs.

Qualtec mixer mobilization and demobilization to be in Phase I.

No costs included for casting station or lab operations.

John A. Kohli

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SECTION IV
ASSUMPTIONS FOR COST ESTIMATE
A/B PONDS PROCESSING

Technical Assumptions

1. All consolidation and chlorination operations will be performed during Phase I.

2. HNUS will only process dewatered sludges from B South Pond. HNUS is not responsible for cementing waters from the process. EG&G will allow decant water, waters separated from the sludges at the rotary screen thickener, and excess process waters to be returned to the ponds for evaporation by EG&G.

3. The quantities of solids are based on sampling performed on April 20, 1992. (May 7, 1992 report)

4. The A/B Product is very thick and cannot be vibrated into place without hand raking the material. Thus we have assumed a 30% void ratio within the half crate.

5. Operators for A/B Pond will come from the HS C Pond Processing Group once a single shift basis is obtained during C Pond Processing. There may be more delay between the two operations than indicated.

6. EG&G will provide all manpower requirements for operation of casting station.

7. EG&G to provide continuous casting operating capabilities during scheduled production hours.

8. Work performed on a double shift basis (net 19 hours/day) for majority of wastes. Processing will be performed on a 6 Day basis.

9. Single Shift Operation will be performed during final cleanup. Final cleanup will be determined to be the period when part of the pond bottom is exposed. B-S Pond has a sloping bottom (1 foot change plus sump).

10. EG&G will be responsible for final cleanup of pond.

11. Usable storage within half crate is 38 cubic feet. Theoretical maximum is 41.6 cubic feet. Maximum weight of half crate is 4750 pounds including the 380 pound container. Bulk density of material measured has been between 105-114 pounds/cubic foot.

12. Any oversize materials (>10 mesh) and Qualtec mixer operation clean out (dry) to be stored in half crates for processing during Phase III Saltcrete processing.

13. Operations based on schedule as submitted with no allowance for expected delays.

Commercial Assumptions

1. Based on A&B Pond Processing Assumptions, Rev 1, August 7, 1992 (attached), CCH additions at 20 Tons, maximum amounts per latest calculations would be approximately 25 Tons.

2. Reclaim subcontract prices (Lefco, Inc.) based on unit prices quoted.

3. Pugmill subcontract prices (Qualtec, Inc.) as extrapolated from latest proposal. Not audited nor negotiated based on new schedule.

4. Halliburton Services prices based on unit costs as supplied by Jeff Neal. Reagent costs not included in this cost estimate section.

5. Flocculent prices per telephone unit cost quotations. Quantities based on latest known usage requirements.

6. Halliburton Services Class "C" Flyash Retarder estimated at .3% of total pozzolan requirements. Capital equipment requirements per Pat Saunders of Halliburton Services.

7. No equipment costs, equipment rental costs, maintenance costs, replacement parts costs, FOG included; assumed to be in Phase I costs.

8. Qualtec mixer mobilization and demobilization to be in Phase I.

9. No costs included for casting station or lab operations.

SECTION V-A.1
REAGENTS
A/B PONDS PROCESSING

A/B POND

Solids-Sludge

DWT Solids (May 7 survey) (228,800 gallons x 15.7% solids (Avg) x 1.099 SG) — 164.42 DWT

Initial Processing @ 20% Solids (1-1½') 79,200 gallons = 56.9 DWT
Final Processing @ 15% Solids (0-1') 149,600 gallons = 107.5 DWT

Solids-CCH

20 Tons @ 100% Solids (Inerts) = 20.0 DWT

Solids Cleanup 130 ea. x $\frac{561\ \#}{ea}$ = 72,930 # + 2000 = 36.5 DWT

TOTAL 220.92 DWT Solids

Water

Initial $\frac{56.9\ T}{x} = \frac{20.0\%\ Solids}{80.0\%\ Water}$; $x = \frac{56.9 \times 80}{20}$ = 227.6 T Water

Final $\frac{107.5\ T}{x} = \frac{15.0\%\ Solids}{85.0\%\ Water}$; $x = \frac{107.5 \times 85}{15}$ = 609.2 T Water

CCH $\frac{20.0\ T}{x} = \frac{16.4\%\ Solids}{83.6\%\ Water}$; $x = \frac{20.0 \times 83.6}{16.4}$ = 102.0 T Water

Cleanup $\frac{36.5T}{x} = \frac{20.0\%\ Solids}{80\%\ Water}$; $x = \frac{36.5 \times 80}{20}$ = 146.0 T Water

TOTAL 1084.8 T Water

Pozzolans

Design @ W/P = .42; $P = \frac{W}{.42} = \frac{1084.8}{.42}$ = 5,165,720 # Pozzolan

TOTAL = 2,582.86 T Pozzolan

	CEMENT	FLYASH	LIME
Total Reagents	1,678,859 #	3,357,718 #	129,143 #
Blending Losses During Blending Operations - 2% of Total	33,578 #	67,154 #	2,582 #
Total for A/B Pond Processing	1,712,437 #	3,424,872 #	131,725 #
TOTAL REAGENTS	5,269,034 # = 2,634.52 TONS		

SECTION V - B.1
HALF CRATE COMPUTATIONS
A/B PONDS PROCESSING

A/B PROCESS HALF CRATE ESTIMATE

Total Weight of Solids in Ponds	164.42	Tons
CCH Inert Materials	20.00	Tons
Cleanup Solids	36.50	Tons
Water	1084.80	Tons
Pozzolans	2,634.52	Tons
Total Weight	3,940.24	Tons
Unit Wt w/o Voids =	117	#/CF
Neat Volume	67,355	CF
30% Void Ratio	20,206	CF
Total Volume	87,561	CF
@ 38 CF/Half Crate =	2,304	Half Crates
Total Half Crates	2,304	

SECTION VI.1
SCHEDULE
A/B PONDS PROCESSING

Cycle Time

The cycle time is a method to describe the scheduled activities for each day. Certain planned activities are scheduled each day. These include processing periods, scheduled wash up of equipment, and scheduled maintenance. These periods have been optimized based on the overlapping 10 hour shifts.

The following schedule will be used for each processing day:

A/B Process Train

Production Hours

	05:30 - 06:00	1st Shift on	½ Hour
	06:00 - 07:00	Prepare for Production	1 Hour
16 Crates	07:00 - 11:00	Production	4 Hours
	11:00 - 12:00	Wash	1 Hour
16 Crates	12:00 - 16:00	Production	4 Hours
	13:30 - 14:00	2nd Shift on	½ Hour
	14:00 - 15:00	Crew Change	1 Hour
	15:00 - 15:30	1st Shift off	½ Hour
	16:00 - 17:00	Wash	1 Hour
	17:00 - 18:00	Maintenance	1 Hour
16 Crates	18:00 - 22:00	Production	4 Hours
	22:00 - 23:00	Wash	1 Hour
	23:00 - 23:30	2nd Shift Off	½ Hour
48 Crates Production			20 Hours

The following summary of half crate production is provided:

Certifiable	2,304 Half Crates
Half Crates to Produce	
3% Non-Certifiable & Outside	0 Half Crates
Total Half Crates Requiring Processing or Reprocessing by HNUS	2,304 Half Crates

These crates will be processed on a single or double shift operation. Single Shift Operations will be limited to final cleanup activities. Volumes of materials during final cleanup operations is anticipated to be approximately 90,000 gallons. Total volume to process is current contents plus a nominal water column of 228,800 gallons. Thus approximately 1,382 crates will be manufactured on a double shift basis and 922 crates on a single basis.

1382 crates ÷ 48 crates/double shift = 29 Days (580 Hours)
922 crates ÷ 16 crates/single shift = 58 Days (580 Hours)

Total Production Days A/B Process Train 87 Work Days

SCHEDULE SUMMARY

	Work Days	Crew Hours
~~Production~~ Days		
Double Shift	29	580
Single Shift	58	580
Total Work Days	87 Days	1160 Crew Hours
Holidays	3 Days	40 Hours
Total Calendar	90 + 6x7 = 105 days (Calendar)	1200 Crew Hours

Summation

Total	105 Calendar Days	15 Weeks
Double Shift	35 Calendar Days	5 Weeks
Single Shift	70 Calendar Days	10 Weeks

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Rev. 3
August 26, 1992

EG&G Rocky Flats
A&B Pond Sludge Processing

Staffing/Manning Program

Manpower	Responsible	Operation/Description
1	HNUS	Project Coordinator Overall project responsibility
1	HNUS	General Superintendent Total field operations responsibility including subcontractors and direct field operations
2 1/shift	HNUS (Subcontract)	Radiological Controls Supervisor On-site responsibility for implementation of radiological controls and adherence to proper work practices
2 1/shift	HNUS (Subcontract)	On-site Health and Safety On-site responsibilities for implementation of Health & Safety Plan
4 1/2nd shift	HNUS	Process Controls (Q/A Q/C) Implementation of QA/QC program including verification and certification of processing activities
1	Brown & Root	Resident Engineer
7 2 shifts	Lefco (Subcontract)	Pond Reclaim Consolidation of Pond A to B series ponds, consolidation and chlorination of B series ponds, Reclaim to Scalping Screen, Operate and maintain undersize sump & pump
6 3/shift	Qualtec, Inc. (Subcontract)	Pugmill Operation Maintain mixer operation, reagent feed system, reagent storage bin, non-hazardous dust collection, HEPA filtration
2 1/shift	Halliburton Services	General Foreman Direct on-site field operations responsibilities
2 1/shift	Halliburton Services	Surge Tank, Transfer Sump Operation Maintain Surge tanks No. 1&2 and pumps (3), Maintain Transfer sump, agitator, and pump
2 1/shift	Halliburton Service	Flocculant Feed, Static Mixer, Rotary Screen Thickener, Slurry Surge Tank Operate and maintain flocculant feed system, maintain flocculant raw materials, maintain rotary screen thickener, maintain slurry surge tank, agitator, heater panels, and mixer feed pump

2 1/shift	Halliburton Services	Cement Flush, Process Water, Dirty Water Separator Operate and maintain cement flush sump and pump, process water tank and pond flush pump, dirty water separator, static screen, and separator pump
2 1/shift	Halliburton Services	DCS Operation Maintain DCS operation including data acquisition
2 1/shift	Halliburton Services	Pumping Operation Maintain pumping operation to casting station
2 1/shift	Halliburton Services	Bulk Reagent Storage Maintain supply and storage of bulk reagent products
3	Halliburton Services	Maintenance Supervision, performance of maintenance operation (1 working supervisor, 2 mechanics, 2 electricians)
?	?	Casting Station Operation

technologies
and services
for a cleaner
and safer
world

HALLIBURTON NUS PROPOSAL NO. P9207219
AUGUST 10, 1992

HALLIBURTON NUS ENVIRONMENTAL CORPORATION BROOMFIELD, COLORADO

PHASE II ON-SITE LABORATORY SERVICES FOR EG&G ROCKY FLATS PLANT SOLAR POND STABILIZATION PROJECT

HALLIBURTON NUS
Environmental Corporation

4.4.4.167

HALLIBURTON NUS PROPOSAL NO. P9207219
AUGUST 10, 1992

HALLIBURTON NUS ENVIRONMENTAL CORPORATION
BROOMFIELD, COLORADO

PHASE II ON-SITE LABORATORY SERVICES
FOR
EG&G ROCKY FLATS PLANT
SOLAR POND STABILIZATION PROJECT

Submitted by:

David M. Simanic

David M. Simanic
Manager, Field Operations
Laboratory Services Group

Approved by:

Joan C Simanic

TABLE OF CONTENTS

7/24/67

1.0 INTRODUCTION

The LSG is pleased to offer this proposal for On-Site laboratory services in support of the EG&G Rocky Flats Plant stabilization/solidification project. LSG personnel understand that the On-Site laboratory will provide analytical support for necessary documentation to ensure that the solidified waste product meets all NVO-325 certification requirements. The current Phase II statement of work for the On-Site laboratory will require testing of solidified product as well as key process control tank testing and raw material testing. The detailed analytical requirements will be described in Section 2.0 "SCOPE OF WORK". Phase II On-Site lab services will only include activities associated with both 207C pondsludge/clarifier and 207A/B pondsludge processing. Sample collection, packaging, and shipment will also be done by LSG personnel.

Prior to performing any analytical testing the following WBS's will have been signed by both HALLIBURTON NUS Project and Program Managers, and EG&G's Project Manager.

- WBS 316 - On-Site Laboratory Operating Instructions
- WBS 311 - On-Site Laboratory Design Criteria

In addition to these an SO Test will have been performed to ensure that all laboratory instrumentation/equipment is functioning properly. It is LSG's understanding that the SO Test Plan for the On-Site lab is not a formally submitted document for EG&G's approval; however, upon request, the document will be made available for EG&G's inspection. The SO Test is scheduled for the weeks of August 16 and 23, 1992. During this time, any miscellaneous supplies and the microwave ovens will be purchased. In addition, a QA/QC representative will travel to Denver to calibrate both balances and review procedures with the analysts. The Health and Safety officer will also inspect the laboratory for possible violation, prior to the start of the cold test.

In addition to the approval requirements of the two mentioned WBS for the On-Site lab, all originally planned On-Site staff members will have completed the following activities or training courses required by EG&G.

- Physical
- Respiration indoctrination
- 40 OSHA training per CFR 1910.120
- Respirator fit
- Hearing conservation CBT
- RCRA OJT training
- RCRA 435 training
- Computer training
- Radiation worker training
- Laboratory worker training
- Health and safety training
- 904 pad indoctrination
- 750 pad indoctrination
- Lock out/tag out (LO/TO)
- EG&G OSHA On-the-Job Training

- OSHA Hazard Communication Training
- Respirator Computer Base Training
- Industrial Safety GET
- Fire Protection GET
- Plant Facilities GET
- Dosimeter Issue

As soon as the courses become available, this list of people will travel to Denver and take the required classes.

- Robert Smith
- Stephanie Riddle
- Daniel Neff
- Scott Neil

An additional course for the two samplers will be the packaging and shipping of samples from Denver to Pittsburgh.

The following personnel from LSG been red badged and received a film badge. The film badges will be read quarterly to monitor radiation worker exposure levels for the On-Site lab people.

- Dave Simanic
- Roger Loughrey
- Frank Stencer
- Dave Elkin
- Robert Maniet

2.0 SCOPE OF WORK

2.1 Required Analyses

The On-Site laboratory will have the capability of performing the following list of analyses per methods specified in WBS 316 "On-Site Laboratory Operating Instructions."

METHOD	TEST
RF-01	pH
RF-02	Total Suspended Solids (TSS) and Total Dissolved Solids (TDS), microwave drying
RF-03	Total Solids (TS), microwave drying
RF-04	Total Solids, EPA 160.3
RF-05	TSS and TDS, EPA 160.2, EPA 160.1
RF-06	Unconfined Compressive Strength (UCS) by ASTM-4219-83
RF-07	Paint Can Test, ASTM D4359-84
RF-08	Paint Filter Test, SW 846 Method 9095
RF-09	Slurry Density, SM 213E
RF-10	Bulk Density, multipycnometer
RF-11	Air Entrainment, Halliburton Services #459.047
RF-12	Accelerated Curing, ASTM-684-89

Sampling and analysis will be done in accordance with Section 7.0 of the Process Control Plan (PCP) for Pond 207/Clarifier. It is also understood by LSG personnel that the same procedures, for the most part, will be used during the 207A/B pond sludge processing. However some modification, or new procedures written, may be required because of the viscosity and consistency of the wetted pondcrete of the 207A/B.

A summary of the sampling and analysis is shown in Table 1.

Please note that the category in Table 1 "STORAGE", in an optional collected sample set and needs to be mutually agreed upon between HALLIBURTON NUS and EG&G. In addition, if problem develops during pond sludge processing, the HALLIBURTON NUS Processing Supervisor may request that more samples be collected and submitted to the On-Site lab for testing. Theses samples will receive immediate attention upon delivery to the laboratory.

Upon conclusion of testing, a sample analysis summary report will be generated and given to the HALLIBURTON NUS Processing Supervisor. This data will be furnished immediately upon the report generation. For tests like TSS and TDS, where time is critical, verbal results may be given and then followed by the hard copy report.

If a non-conformance or an out of tolerance test result exceed the LSG's QA requirements, immediate notification will be given to both the LSG Project Manager and Quality Assurance Coordinator. Corrective action will follow the non-conformance as outlined in the RF methods and LSG's "General Quality Assurance/Quality Control Procedure Manual".

2.2 Additional On-Site Lab Duties

Besides performing the sample analysis outlined in Section 2.1 of the proposal each On-Site staff person will share in the following responsibilities.

- Consumable/supply ordering
- General housekeeping of Tent 5 Permacon
- Waste disposal
- Adherence to HALLIBURTON NUS Health and Safety Plan
- Sample container stocking
- Chain-of-custody form

It will be the responsibility of the On-Site Laboratory Supervisor(s) to assign the tasks to the lab staff members.

In addition to these tasks, LSG personnel will provide all sampling support for both certification, process control, and storage sampling activities and packing/shipping of the samples to our Pittsburgh laboratory. EG&G will provide HALLIBURTON NUS LSG personnel the necessary training, procedures, and support prior to shipment of any samples from Rocky Flats to the Pittsburgh Lab.

SUMMARY OF SAMPLING AND ANALYSIS FOR 207/CLARIFIER SLUDGE PROCESSING

TEST FOR	SAMPLE LOCATION	FREQUENCY	# OF SAMPLES	METHOD OF ANALYSIS	SAMPLE CONTAINER	SAMPLE VOLUME	LOCATION OF ANALYSIS
CERTIFICATION OF PONDCRETE							
1) Paint can	Near casting station	Random	17 total	RF-12, RF-07	2" round x 4" long plastic cylinder	206 ml	Tent 5 Permacon
2) Paint filter	Near casting station	Random	17 total	RF-12, RF-08	2" round x 4" long plastic cylinder	206 ml	Tent 5 Permacon
3) TCLP Metals	Near casting station	Random	17 total	RF-12, SW 846	2" round x 4" long plastic cylinder	206 ml	RF-12 Tent 5 Permacon; Metals and organics testing at HNUS Pittsburgh Lab
4) TCLP Organics	Near casting station	Random	17 total	RF-12, SW 846	2" round x 4" long plastic cylinder	206 ml	
PROCESS CONTROL							
1) UCS	Near casting station	Every batch	5-10/day	RF-12, RF-06	2" round x 4" long plastic cylinder	206 ml	Tent 5 Permacon
2) TDS/TSS	Batch tanks	1/day	~5/day	RF-02, RF-05	1000 ml plastic container	800 ml	Tent 5 Permacon
3) TS (207A/B only)	Batch tanks	1/day	~5/day	RF-03, RF-04	1000 ml plastic container	800 ml	Tent 5 Permacon
4) Slurry Density	Clarifier, Brine tank	Every batch	5-10/day each time	RF-09	1000 ml plastic container	500 ml	Tent 5 Permacon
5) Air Entrainment	Near casting station	Every batch	5-10/day	RF-11	1000 ml wide mouth plastic container	1000 ml	Tent 5 Permacon or near casting station
STORAGE							
1) As needed	Near casting station	Every 4th half crate	~20 samples/day	RF-07 or RF-08 or RF-06 or SW 846	5 - 2" round x 4" long plastic cylinder	206 ml for each cylinder	As needed

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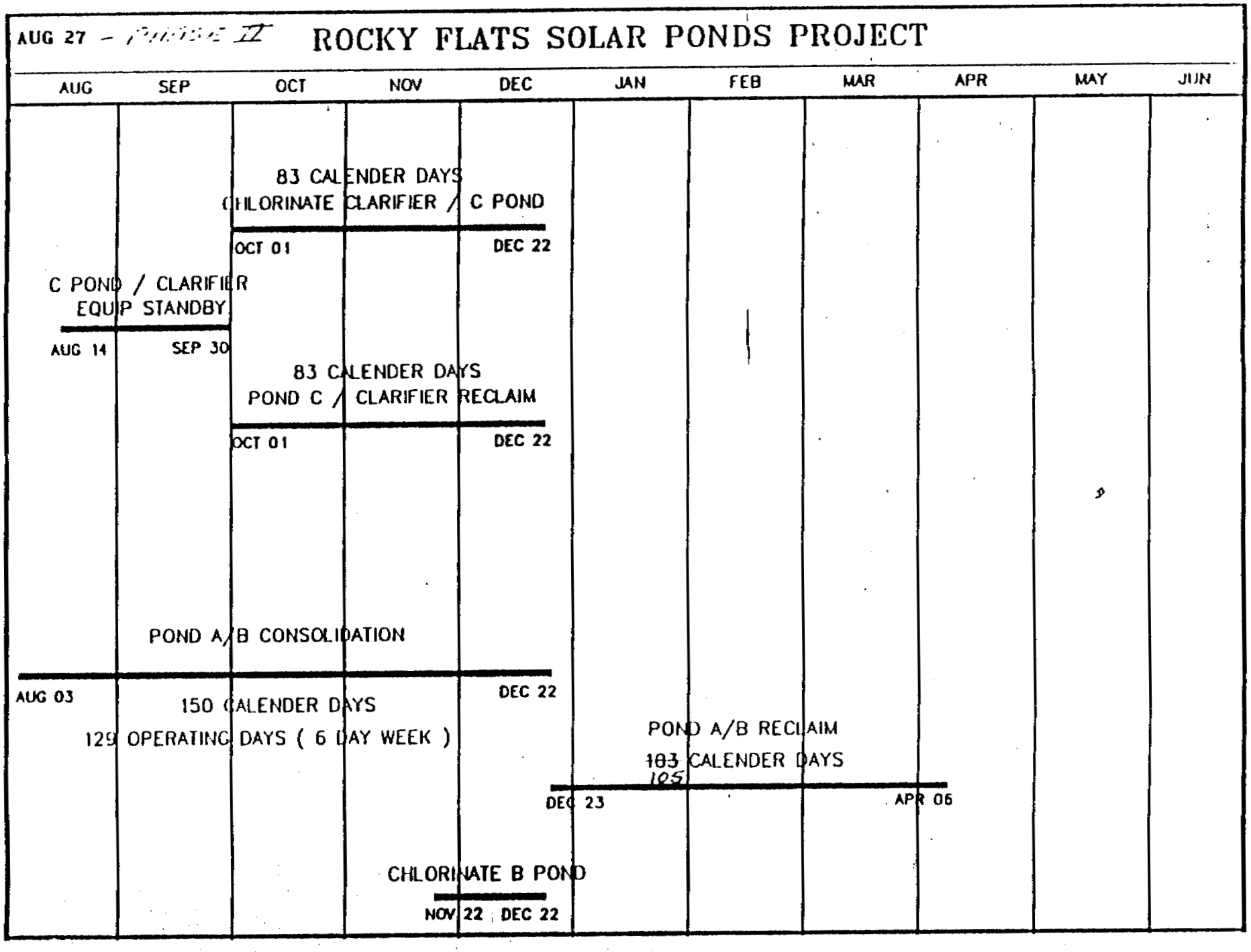
ROCKY FLATS SOLAR PONDS PROJECT



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3.0 EQUIPMENT AND FACILITIES

During the weeks of July 5, 12, and 19, 1992 all instrumentation/equipment for the On-Site laboratory was assembled and a mini SO test conducted. Electrical outlets were scheduled to be installed the weeks of July 26 and August 2, 1992. As of July 28, 1992 only the printer, duct (1-10 ft. piece), and drawers for the tables have not been received and transported to the lab. When all equipment is in place, a two week SO test will begin August 16, and end August 29, 1992. This will complete the Phase I portion of work. Following this testing the Phase II portion of work will start on September 1 and continue through December 10, 1992.

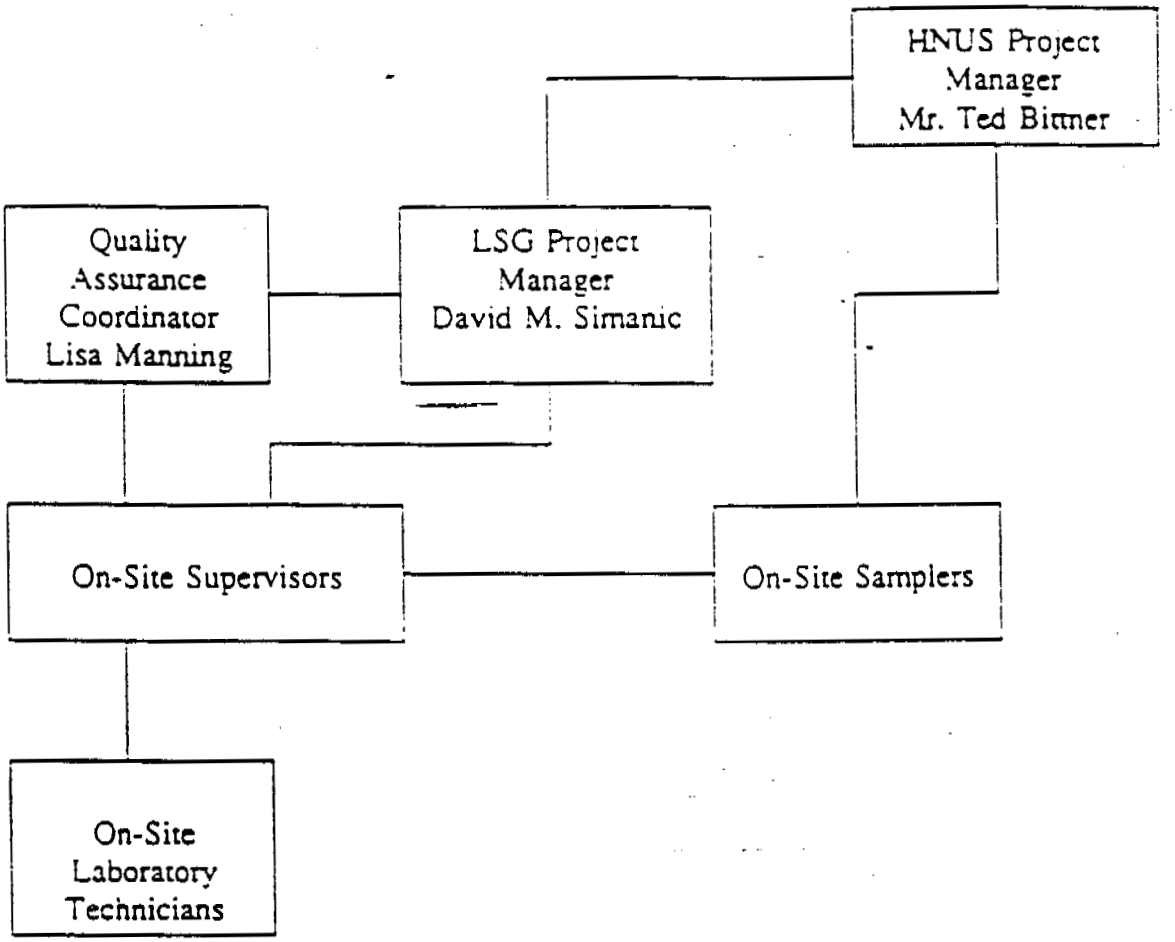
Some additional equipment may also need to be ordered for the On-Site lab staff to perform analysis on the 207A/B pondcrete. This has not yet been determined. Pond sludge processing for 207A/B is anticipated for April 1 - May 31, 1992.

It is anticipated that, regardless of schedule, the On-Site lab will remain standing as assembled until all pondsludge and clarifier sludge has been processed.

Equipment which will be needed for sampling, hoods, HEPA filters, secondary containment are not included in LSG's scope of work.

4.0 STAFFING

To support both the 207C/clarifier and 207A/B pond sludge processing HALLIBURTON NUS proposes to staff the On-Site laboratory with a Supervisor, Laboratory Technician, and a sampling person. Each three-person team will work approximately an 11-hour shift and include a 1-hour overlap to convey sample status and information from the first to second shift. The following organizational chart is shown and shows only LSG's involvement with the project.



The following groups of individuals have been selected based on experience and education, for each shift of operation.

	Day Shift	Back Shift
Supervisor	Roger Loughrey or Frank Stencer	Dave Elkin
Laboratory Technician	Robert Smith	Dan Neff
Sampler	Scott Neil	Stephanie Riddle

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Roger Lougnrey and Frank Stencer will share the day shift supervisor position and will rotate on a biweekly basis. Dave Elkin will anchor the back shift and will be permanently based in Denver for most of the project. Laboratory technicians and samplers will also be permanently based in Denver and are only expected to travel to their home town during the Thanksgiving Holiday. Resumes of key individuals are included as Appendix A.

Also during the first three weeks of September 1992, LSG proposes an additional technician during the day shift to cover an anticipated heavier sample load of samples during cold and hot testing. Additional support will also be given to the LSG Project Manager during this time.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The LSG of HALLIBURTON NUS has an established ongoing QA/QC program which documents all phases of sample collection, analysis, frequency of blanks, duplicates, spikes, matrix spike duplicates, reports, and corrective action when an out of limit situation occurs. These comprehensive procedures are contained in LSG's General Quality Assurance Plan, Volume I and Volume II. This QA manual is a HALLIBURTON NUS controlled document and a copy will be located at the On-Site Laboratory. Analytical methods which appear in our manual will not be used. Instead, matrix specific Rocky Flats waste procedures contained in the Operating Instructions will be followed.

For your information a summary from the LSG General QA Plan is shown.

LSG's General Quality Assurance (QA) Plan was written to meet the combined requirements of EPA QAMS-005, EPA SW-846, and ASTM C 1009-83, as well as the general requirements of the HALLIBURTON NUS Environmental Corporation Quality Assurance Policy Manual. This General QA Plan has been written as a "stand-alone" document, but it may be incorporated in whole or in part in site-specific Quality Assurance Project Plans or Sampling and Analysis Plans.

The elements that are addressed by the QA Plan are summarized below.

Sections 1 and 2 are used to maintain control over the distribution of the general QA Plan.

Section 3, Quality Assurance Program and Policy, describes the overall intent and structure of LSG's quality assurance program.

Section 4, Organization and Responsibilities, depicts the organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality within LSG.

Section 5, Data Quality Objectives for Precision, Accuracy, Representativeness, Comparability, and Completeness (PARCC), defines LSG's generic data quality objectives (DQOs) for each characteristic with respect to its fixed-base laboratory analyses.

Section 6, Sampling Procedures, establishes requirements for the preservation of samples, and the collection of samples by LSG's Field Operations Group.

Section 7, Laboratory Sample Tracking, outlines procedures for receipt, log-in, storage, and tracking samples received for analyses at fixed-base laboratories.

Section 8, Laboratory Quality Control, provides an overview of the quality control (QC) measures used to assess and control analytical processes. Specific information on quality control checks for individual laboratory groups is provided in Appendices B through I of the General Quality Assurance Plan. The blind QC sample program and participation in interlaboratory performance evaluation studies are detailed in Section 12, Performance Audits.

Section 9. Analytical Procedures, specifies the sources of analytical methods used by LSG at its fixed-base laboratories and defines controls on their content, approval for use, distribution, and revision.

Section 10. Data Handling, defines Laboratory Services Group (LSG) procedures for data collection, reduction, entry into the LIMS, validation, and reporting. Where procedures for CLP work and non-CLP work diverge, data handling is described for both.

All LSG data is collected, reduced, entered, validated, and reported in accordance with this procedure unless an alternate scheme is outlined in an LSG project-specific QA plan or work plan.

Section 11, Systems Audits, defines LSG's plan for regulatory monitoring the implementation of this General Quality Assurance Plan through systems audits is described in this procedure.

Radiation safety and waste handling and disposal procedures are also monitored in accordance with this procedure. Work performed under project checklists or work plans, quality assurance project plans, and contracts may also be audited at the discretion of the Quality Assurance Coordinator, the Vice President and General Manager, or Assistant General manager.

External systems audits (those conducted by organizations other than LSG) are also used as sources of feedback on the quality and performance of the laboratory. Nonconformances identified during external systems audits are documented and corrected in the same manner as internal systems audit findings.

Section 12, Performance Audits, LSG participates in performance evaluation studies sponsored by the EPA, AIHA, and a variety of state certification programs. LSG also conducts an internal Blind Quality Control Sample Program to monitor data quality at each LSG operation (fixed-base or remote).

Section 13, Preventive Maintenance, describes the requirements that have been established to ensure that instruments used for sample analysis function properly and reliably and to minimize prolonged instrument downtime so that regulatory holding times and other sample turnaround commitments can be met. These requirements apply to LSG's fixed-base and mobile laboratory operations.

Section 14, Data Quality Assessment Procedures, describes the objective evaluation of LSG data and final reports with respect to accuracy of technical information and presentation to the client. The procedure is applicable to all types of technical reports issued by LSG, including basic lab analysis reports and quality assurance reports, CLP data packages, non-CLP data packages, and discharge monitoring reports from fixed or remote operations. The report review sequence specified in this procedure is intended to evaluate the effectiveness of data review within the operations and sampling and monitoring groups, not to replace it.

Section 15, Corrective Action, describes the mechanisms by which corrective actions for nonconformances detected through routine sampling and laboratory operations, or systems audits are identified and closed.

Section 16. Quality Assurance Reports to Management, defines vehicles for the discussion of quality control issues among mid-level group management and reporting of the Quality Assurance Department's activities and concerns to upper-level management.

Section 17, Training Program, describes the LSG plan for the conduct of training in areas affecting quality. It specifically applies to the training of laboratory personnel in the following areas: LSG quality assurance program, analytical methods, and project-specific requirements. The procedure also addresses training in safety and waste handling procedures.

Section 18, Personnel Qualifications, describes the acceptable combinations of educational background, training, and experience required for various skill levels of work in areas affecting the quality of the final product, specifically field sampling and analytical work. This procedure is designed to supplement the training procedures in Section 17 to ensure that all LSG staff meet specified requirements for the work functions they perform. The positions covered in this are not comprehensive for all laboratory functions but are confined to those areas directly affecting product (data) quality. Some positions specified in the Organization and Responsibilities section of this General Quality Assurance Plan are classified according to the scheme in this Section but are given different job assignments, such as Quality Assurance and Customer Services personnel.

Section 19, Materials and Facility Control, defines the requirements for control of data quality through control of the raw materials and the environment in which analyses are conducted. Specifically, the procedure addresses procurement of the materials necessary to support the analysis process, inventory control, and security and environmental stability of the facility. The procedure is applicable to all fixed-base LSG facilities.

Section 20, Quality Assurance Records, defines controls on generation, maintenance and retrieval, transmittal, and retention of quality assurance (QA) records. The intent is to ensure that the records generated by LSG provide a valid and complete account of the work performed. This procedure applies to all quality assurance records generated and/or maintained by LSG at all operations (fixed or remote).

This procedure also defines controls on applications software and electronically stored data files.

Appendix A provides a glossary of terms.

Appendices B through I describe the calibration and quality control checks for routine analyses for each of the laboratory areas.

Appendix J summarizes the preventive maintenance requirements for all laboratory equipment.

Appendix K provides a user's guide to the QA module for the Laboratory Information Management System.

Appendix L summarizes the Quality Assurance Program Plan and Standard Operating Procedures for mobile laboratory services.

Appendix M summarizes LSG's requirements for its contract with the New Jersey Department of Environmental Protection (NJDEP) for Contract Laboratory Program (CLP) analyses.

Appendix N details guidelines for the screening and safe handling of radioactive materials.

APPENDIX A

RESUMES

David M. Simanic
Roger W. Loughrey
Frank C. Stencer
David M. Elkin

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DAVID M. SIMANIC

MANAGER, FIELD OPERATIONS

EDUCATION

Point Park College,
B.S., Mechanical Engineering Technology, 1987
Community College of Allegheny County,
Engineering Curriculum, 1974-1977
The Pennsylvania State University,
A.S., Chemical Engineering Technology, 1973

HALLIBURTON NUS Environmental Corporation,
Hazardous Waste Operations Training, 40-hour course
in compliance with OSHA Standard 29 CFR 1910.120, 1988
Instrument Society of America,
Flow Measurement Course, 1981

EXPERIENCE

HALLIBURTON NUS ENVIRONMENTAL CORPORATION, 1977-Present
Westinghouse Electric Corporation, 1974-1977

As Manager of Field Operations, has financial and technical responsibility for mobile laboratory operations and sampling and monitoring groups in both the Pittsburgh and Houston laboratories. On-site mobile laboratories are custom designed to fit specific client/project requirements as well as the methods of analyses and their associated QA/QC. Since providing this unique capability, has successfully completed at least a dozen projects in the past several years.

Responsible for starting the sampling group in Houston in 1989 and significantly increasing revenues for the laboratory group. Sampling and monitoring encompasses many activities in support of NPDES and RCRA groundwater monitoring.

Primary responsibility for projects related to industrial waste permit applications, effluent monitoring programs, sampling and gauging surveys, industrial process and wastewater surveys, and laboratory treatability and feasibility studies. Involved with problem definition, effluent characterization, and process selection for many water treatment and wastewater pollution abatement facilities. Extensive experience in the selection and use of field equipment such as flow recorders and automatic sampling devices, is familiar with various

analytical procedures, and is responsible for the supervision of field sampling technicians and scheduling of work for the field operations group.

RELATED EXPERIENCE

Over seventeen years of direct experience in the areas of environmental compliance, chemical analyses, and mobile laboratory operations. Environmental compliance includes RCRA sampling, analyses, and permitting, in addition to large multi-plant NPDES sampling, analysis, and permit application completion. Some of these include:

- Scheduled to serve as Project Manager for the on-site laboratory at Rocky Flats.
- Established an on-site chemical laboratory at Kelly Air Force Base for soil gas analyses, EPA 601 and 602 volatile organic analyses, and EPA 608 PCB analyses. Samples were received from several sites around the base.
- Established an on-site mobile laboratory for the Springfield Wells project in Michigan, performing EPA 601/602 analyses.
- Established an on-site mobile laboratory for the Spiegelberg Site in Hamburg, Michigan, performing EPA 601/602 analyses.
- Established an on-site mobile laboratory for EPA 601/602 analyses for field investigation at Goodfellow Air Force Base.
- Managed NPDES permit application renewal projects for large companies such as United States Steel (7 plants), Cleveland Electric and Illuminating (7 plants), Niagara Mohawk Power Corporation (6 plants), Wheeling Pittsburgh Steel (8 plants), Ohio Edison Company (6 plants), Texas Utilities (8 plants), LTV Steel (5 plants), Consolidated Edison (3 plants), Indiana & Michigan Power (4 plants).

OTHER RELATED EXPERIENCE

Worked primarily as the chief chemistry technician performing chemical analyses in support of corrosion testing for steam generator activity. Set up entire laboratory to perform these tests. Prepared solutions for maintaining "in spec" loop chemistry conditions. Familiar with radiation safety procedures and precautions.

Performed steam generator chemistry analysis which included hydrazine, morpholine, dissolved oxygen (Winkler and Indigo Carmine), phosphates, silica, pH, conductivity, chlorides, sulfates, and ammonia.

Assisted in maintaining high purity deionized water system.

MEMBERSHIPS

American Society for Testing and Materials

P06092

ROGER W. LOUGHREY

SENIOR CHEMIST, SPECIAL PROJECTS

EDUCATION

Duquesne University,
B.S., Chemistry, 1966

University of Toledo,
Division of Continuing Education Seminar on
Field Monitoring, 1989
HALLIBURTON NUS Environmental Corporation,
Hazardous Waste Operations Training, 40-hour course in
compliance with OSHA Standard 29 CFR 1910.120, 1988
Waters School of Liquid Chromatography,
Course in high performance liquid chromatography, 1987
Dionex Corporation,
Ion chromatography seminars, 1984, 1987
SACP-sponsored seminars,
Hazardous Waste Seminar, 1986
Multidimensional Gas Chromatography, 1984
A Guide to Environmental Analysis, 1981
The Personal Computer and the Laboratory, 1981
Water Priority Pollutant Analysis, Leachables, EPA Standards and
Reference Materials, 1981
Modern Capillary Chromatography, 1979
High Performance Liquid Chromatography, 1979

EXPERIENCE

HALLIBURTON NUS ENVIRONMENTAL CORPORATION, 1978-Present
Herron Testing Laboratory, 1974-1978
Michigan Chemical Corporation, 1970-1974
Atlantic Richfield Company, 1966-1969

As a senior chemist, is responsible for special project management, including supervision of laboratory analyses and data reduction. Currently, serves as the technical coordinator for mobile laboratory operations. Responsibilities include initial set up of instrumentation, confirmation of required supplies, analytical training for field chemists, and data validation services. Provides consultation and technical guidance to chemists in the mobile laboratories. Modifies methodology to establish its applicability to field conditions.

Served as group leader of the gas chromatography section. In this capacity, was responsible for the supervision of other personnel involved in the analysis of water, wastewater, and sediments for the presence of pesticides, herbicides, PCB's, volatiles, and gases using gas chromatography (GC) and high performance liquid chromatography (HPLC) techniques. Coordinated the entire analytical process including sample preparation, analysis by gas chromatography, and reporting of results. Responsibilities included training laboratory personnel, implementation of the quality control program, review of data generated in the laboratory, routine maintenance of the instruments as well as the development of new procedures, and analyses of samples for nonroutine parameters. Devised a method for the analysis of organic acids in water at low concentrations.

RELATED EXPERIENCE

- Expertise in instrumentation, including the use of gas chromatographs equipped with thermal conductivity, flame ionization, flame photometric, electron capture, photoionization, nitrogen-phosphorus, and Hall detectors; gas chromatography/mass spectrometry; and infrared spectrometry. Serves as the laboratory specialist in infrared analyses.

- Qualitative and quantitative analyses of general industrial products utilizing gas/chromatography and thin layer chromatography techniques. Provided assistance to clients in meeting environmental and health standards required for their products by defining the problem, suggesting possible solutions, and, finally, proceeding with the investigation.

- Performed trace analyses on charcoal and tenax tube samples for air components using gas chromatography in accordance with NIOSH methods.

- Special projects, including the examination of fatty acids to determine the origin of materials and the treatment of meat products followed by derivatization of amino acids for gas chromatography determinations.

- Stack gas sampling for measuring air pollutants and testing of air samples.

- Principal chromatographer in support of the research and pilot plant development of new halogenated organic compounds. Also served in a supervisory capacity in the areas of gas chromatography and infrared spectrometry.

- Method development and pilot plant studies, including the investigation of the thermal stability of a product used as a flame retardant to determine the cause of eye irritation resulting from its use.

- Research and development of new petrochemicals for industry use.
- Kinetics study of an organic compound necessary for the development of plant processes.
- Special projects, including the study of esterification reactions to optimize procedures used in the production of plasticizers.

MEMBERSHIPS

American Chemical Society
Society for Analytical Chemists of Pittsburgh

PUBLICATION

Gonter, C.E. and R.W. Loughrey, "The GC Determination of Pesticides and PCBs Using Temperature Programming," presented before Division of Environmental Chemistry, American Chemical Society, New York, New York, August 1981.

P06191

FRANK C. STENCER

PROJENT MANAGER-FIELD OPERATIONS

EDUCATION

University of Texas at San Antonio
Courses for Engineering Degree
Slippery Rock University of Pennsylvania.
B.S., Environmental Science, 1985

HALLIBURTON NUS Environmental Corporation
40-hour Health and Safety Hazardous Material Handling Course
in compliance with OSHA 29CFR1910.120, 1990
HALLIBURTON NUS Environmental Corporation
8-hour Health and Safety Refresher Training Course
in compliance with OSHA 29CFR1910.120, 1988
Hewlett Packard Training Center, 1988

EXPERIENCE

HALLIBURTON NUS ENVIRONMENTAL CORPORATION, 1988-Present
Raba-Kistner Consultants, Inc., 1986-1988
ARCO Chemical Company, 1985
Equitable Research, 1984

Prepares laboratory propsals for fixed and mobile laboratory analytical work. Prepares and gives presentations to customers and potential mobile laboratory clients. Manages mobile laboratory projects including scheduling, logistics, and invoicing both on and off site. Serves as customer service representative in the field.

RELATED EXPERIENCE

- Provided on-site gas chromatography (GC) analysis in the HALLIBURTON NUS mobile laboratory stationed at the Kelly Air Force Base. Analytical procedures included a modified EPA 601, 602, and 608. Operated and performed routine maintenance and troubleshooting on a Hewlett Packard 5890 GC in conjunction with flame ionization (FID), photoionization (PID), and electron capture. Used a Nelson Turbochrome software system with a 386 chip personal computer system to process all data.

  Duties included sample log-in, sample preparation, and training of new mobile lab personnel.

- Five years' experience performing gas chromatography (GC) and high performance liquid chromatography (HPLC) techniques and interpreting chromatograms. Analyses included pesticides, herbicides, PCBs, and target compounds from the RCRA Appendix VIII and Appendix IX lists.

- Experienced in the use of the rigorous quality assurance protocols of the U.S. EPA Contract Laboratory Program (CLP).
- Experienced in sample preparation techniques.
- Participated in a wastewater polymerization study and a sulfur emissions study.
- Performed industrial hygiene sampling.

MEMBERSHIPS

- American Chemical Society

P02052

DAVID M. ELKIN

TECHNICIAN

EDUCATION

A. W. Beattie Technical School. 1985-1987
Certificate of completion, Microbiology

EXPERIENCE

HALLIBURTON NUS ENVIRONMENTAL CORPORATION, 1987-Present

As a technician in the inorganic laboratory, is experienced in a variety of wet chemistry techniques including colorimetric, gravimetric, titrimetric, and distillation procedures. Specific analyses include sulfite, surfactants, thiocyanate, thiosulfate, TOC, phenolics, cyanide, ammonia, nitrogen, TOX, Langlier Saturation Index, total Kjeldahl nitrogen, soxhlet extractions, hexavalent chromium, free and total acidity, alkalinity, chloride, BOD, boron, carbon dioxide, nitrate, odor, COD, oil and grease, pH, phosphorous, total and dissolved solids, and conductivity. Experience with USEPA Contract Laboratory Program (CLP) protocols includes 5 years for percent moisture and pH for organic extraction.

Microbiological tests include standard plate count, total coliform, fecal coliform, fecal streptococcus, and sulfate reducing bacteria.

RELATED EXPERIENCE

Performed mercury determinations by the cold vapor technique.

P05252

HALLIBURTON SERVICES - SUMMARY

WBS CODE/DESCRIPTION	TOTAL COSTS	C POND	A/B POND
Pozzolan Blending Service			
110 - 207 C Pond	456,889	456,889	
110 - 207 A/B Ponds	364,638		364,638
Pondsludge Processing			
220 - 207 C Pond	1,054,541	1,054,541	
210 - 207 A/B Pond *	530,386 *		530,386
Field Supervision			
410 - 207 C Pond	313,682	313,682	
410 - 207 A/B Pond *	460,622 *		460,622
Administrative & Indirect Support			
423 - 207 C Pond	110,715	110,715	
423 - 207 A/B Pond	62,259		62,259
	2,896,843	1,478,938	1,417,905

* Note: See WBS 210 Estimate Backup for 207 A/B Pond Costs!

28-Aug-92 HS

REVISED DETAIL BY JH

SOLAR POND/PONDCRETE WASTE PROCESSING
EG & G ROCKY FLATS
PHASE II ESTIMATE - REVISED

HALLIBURTON SERVICES
AUGUST 7, 1992

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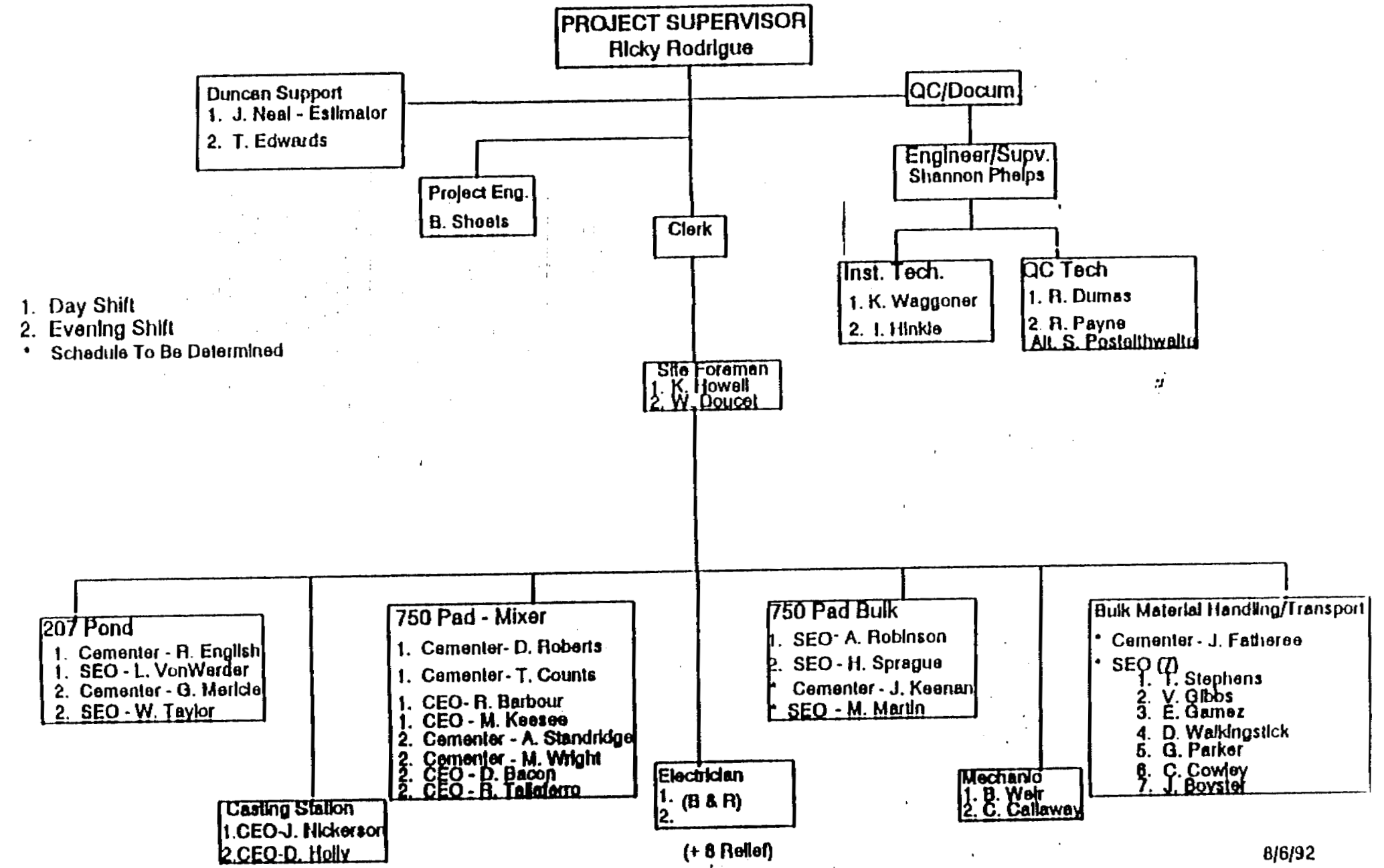
ROCKY FLATS PROJECT

Halliburton Services
Special Services Dept.



8/6/92

LEFCO ENVIRONMENTAL TECHNOLOGY
EQUIPMENT RENTAL RATES

EQUIPMENT DESCRIPTION	DAILY RENTAL RATE	STANDBY RATES SHORT TERM	STANDBY RATES LONG TERM
CONSOLIDATION:			
W85 TRAILER PUMP(BACK-UP RATE	350	245.0	175.0
VACUUM PUMP FILTRATION	100	70.0	50.0
DOUBLE CONTAINMENT SYSTEM	35	24.5	17.5
DIAPHRAGM PUMPS, COMPRESSOR	275	192.5	137.5
SUBMERSIBLE CENTRIFUGAL	175	122.5	87.5
HYDRAULIC POWER TRAILER	50	35.0	25.0
DOUBLE PIPING	20	14.0	10.0
INTRA-POND PIPING	100	70.0	50.0
MANIFOLD VALVES	125	87.5	62.5
GENERATOR & CONTAINMENT	200	140.0	100.0
SCALPING SCREEN	250	175.0	125.0
AGITATOR TANK	150	105.0	75.0
SLURRY TRANSFER PUMP	50	35.0	25.0
DOUBLE CONTAINMENT	55	38.5	27.5
CLARIFIER:			
W85 TRAILER PUMP	1000	700.0	500.0
DOUBLE CONTAINMENT	55	38.5	27.5
HEPA & CARBON FILTRATION	200	140.0	100.0
SCALPING SCREEN	250	175.0	125.0
AGITATOR TANK	150	105.0	75.0
RECLAIM TRANSFER PUMP	50	35.0	25.0
DOUBLE CONTAINMENT	55	38.5	27.5
WATER BLASTER SYSTEM	200	140.0	100.0

LEFCO ENVIRONMENTAL TECHNOLOGY
EQUIPMENT RENTAL RATES

EQUIPMENT DESCRIPTION	DAILY RENTAL RATE	STANDBY RATES SHORT TERM	STANDBY RATES LONG TERM
POND 207C:			
W85 TRAILER PUMP	1000	700.0	500.0
DOUBLE CONTAINMENT	55	38.5	27.5
HEPA & CARBON FILTRATION	200	140.0	100.0
DOUBLE PIPING & PRESS RELIEF	100	70.0	50.0
HYDRAULIC AUGER ATTACHMENT	150	105.0	75.0
HYDRAULIC POWER TRAILER	50	35.0	25.0
HIGH PRESSURE BLASTER	200	140.0	100.0
RECLAIM WATER PUMP	50	35.0	25.0
SCALPING SCREEN	250	175.0	125.0
AGITATOR TANK	150	105.0	75.0
SLURRY TRANSFER PUMP	50	35.0	25.0
DOUBLE CONTAINMENT	55	38.5	27.5
GENERATOR	200	140.0	100.0
CaOCL INJECTION SYSTEM	100	70.0	50.0
CCH MIX TANKS	100	70.0	50.0
RETENTION TANK	100	70.0	50.0
DOUBLE CONTAINMENT	45	31.5	22.5
TRANSFER PUMP	50	35.0	25.0
ELECTRONIC FLOW MEASUREMENT	150	105.0	75.0
RECLAIM POND 207B-SOUTH:			
W85 TRAILER PUMP	1000	700.0	500.0
DOUBLE CONTAINMENT	55	38.5	27.5
HEPA & CARBON FILTRATION	200	140.0	100.0
DOUBLE PIPING & PRESSURE RELIE	100	70.0	50.0
SCALPING SCREEN	250	175.0	125.0
AGITATOR TANK	150	105.0	75.0
SLURRY TRANSFER PUMP	50	35.0	25.0
DOUBLE CONTAINMENT	45	31.5	22.5
FLUSH WATER PUMP	50	35.0	25.0

LEFCO ENVIRONMENTAL TECHNOLOGY
EQUIPMENT BUY OUT COSTS

EQUIPMENT DESCRIPTION	BUY OUT COSTS
POND 207C:	
AIR COMPRESSOR	18,000
DOUBLE CONTAINMENT	2,500
HEPA & CARBON FILTRATION	15,000
DOUBLE PIPING & PRESS RELIEF	1,000
HYDRAULIC AUGER ATTACHMENT	3,500
HYDRAULIC POWER TRAILER	30,000
DIAPHRAGM PUMPS, ~~COM~~PRESSOR	1,500
INTRA POND PIPING	6,000
SCALPING SCREEN	12,000
GENERATOR	30,000
WATER BLASTER SYSTEM	16,000
CaOCL INJECTION SYSTEM	1,500
CCH MIX TANKS	2,000

3.0 SUBCONTRACT PRICE

3.1 General Contractor agrees to pay Subcontractor for complete, satisfactory, and timely performance of the Work in strict accordance with the requirements set forth in this Subcontract. The estimated Total Subcontract Price, including Subcontractor's Fee shall not exceed **One Million, Two Hundred Twenty One Thousand, Eight Hundred Twenty Five Dollars** ($1,221,825.00).

3.2 The Subcontract price includes salaries and wages; payroll burdens, benefits and taxes; computer usage, reprographics and other Subcontractor services; travel expenses; general and administrative expenses; overhead; and fee. The Subcontract price is subject to adjustment based on additions, deletions or modifications in the Work as approved by Owner and Contractor. The price of additions, deletions and changes in the Work shall be based on the rates and prices contained in attached Exhibit "C", "Equipment Rental Rates and Labor Rates". The prices contained in Exhibit "C" are fixed and firm and are not subject to increase for the duration of the Project.

3.3 The daily equipment rental rates in Exhibit C are to be used for reimbursement of equipment used in the performance of this Subcontract. For equipment on short term standby the rental rate is 70 percent of the full daily rate. Short term standby is any period of time less than one month, or 30 days, in length that equipment is on site ready for use but not in operation. For equipment on long term standby the rental rate is 50 percent of the full daily rate. Long term standby is defined as a period of time greater than one month, or 30 days, in length for which equipment remains on site while personnel are demobilized. LEFCO would be notified in advance of any long term standby periods.

3.4 The hourly labor rates shown in Exhibit C include labor costs, travel, per diem, additional vacation benefits, payroll burden, overhead, and fee. Once personnel have been mobilized to the site the minimum time charged for their services is eight hours per day. Any time worked in excess of the eight hour minimum will be charged at the hourly rates in Exhibit C. Once personnel have been demobilized there will be no labor charges until such time as the personnel have been re-mobilized to the site.

$500 max
500 demob

Brown & Root, Inc.

Post Office Box 3
Houston, TX 77001-0003

July 31, 1992

Letter No.: BAR-HED-0089
File No.: 325.14

Halliburton NUS Environmental Corporation
452 Burbank Street
Broomfield, Colorado 80020

ATTENTION: Ted Bittner

SUBJECT: Rocky Flats Solar Pond/Pondcrete
Waste Processing Project
Brown & Root Job No. JR-1198

REFERENCE: Pond Sludge Processing
Estimate at Completion - Phase I and
Estimate for Phase II

Dear Mr. Bittner:

Attached hereto per your request are the above referenced estimates.

Please note that the Phase II estimate only includes Mr. J. H. Templeton's time for a ten-week period in the field. We have included an SF-1411 with back up for Phase II.

Please note that per our discussion this morning, for the Phase I estimate, we have included costs spent to date for Pondcrete/Saltcrete work and all costs for the Engineering Sustainment and Support team are included in WBS 450. As the team members charge their time to other WBS numbers, this WBS number will be debited and the proper WBS numbers will be credited. This reconciliation will be done once a month in the monthly report.

If you have any questions, please contact either me or Mr. L. F. Nicolai.

Very truly yours,

BROWN & ROOT, INC.

John R. Zak, P.E.
Project Manager
JRZ:fh
Attachment

RECEIVED
AUG - 3 1992
H. E. T. ROCKY FLATS

cc: Y. F. Boutros
L. F. Nicolai
J. H. Templeton

HALLIBURTON NUS
Environmental Corporation

June 23, 1992

Mr. John Munday
Halliburton NUS Environmental Corporation
8950 North Course Drive
Houston, TX 77084

Subject: Request For Purchase Orders
Cement, Fly Ash, and Lime
Phases I, II, and III
Rocky Flats Solar Ponds/Pondcrete Stabilization
RF-HED-92-0370

Dear Mr..Munday:

HNUS Denver has completed commercial and technical evaluations of bids for providing pozzolans for all Phases of the above referenced project, and is hereby requesting issuance of purchase orders to selected vendors.

The following vendors have been solicited for competitive bid:

7880 Tons (±25%) Type V Cement

Vendor	Total Value	U.D.
Dacotah Cement	$544,200	69.06
Southwestern Portland Cement Co.	$568,776	72.18
Mountain Cement Co.	$560,960	71.19
Holnam Inc.	$591,976	75.12

All of the above bidders meet the technical standards for supplying ASTM C 150, Type V Cement, and HNUS recommends that Dacotah Cement be awarded the purchase order based on price and delivery time quoted.

15,760 Tons (±25%) Class C Fly Ash

Vendor	Total Value	U.D.
Pozzolanic International	$535,840	34.00
Western Ash Co.	$559,720	35.52
National Minerals Corp.	$504,320	32.00
Construction Minerals	No Response	

HNUS recommends National Minerals Corp. supply ASTM C 618, Class C Fly Ash for the project based on low price. Their material meets the required specifications in all measured categories except for Al_2O_3. HNUS chemist Shaj Mathew suggests waiving the specification for a maximum of 22% of the compound. National Minerals Corporation's material contains 22.83% Al_2O_3.

The original RFQ dated May 15, 1992 received responses from only 2 bidders, Pozzolanic International and Western Ash. Fly ash from Pozzolanic was significantly out of spec. for the CaO content, as can be seen on the enclosed bid tabulation, and their bid was eliminated from consideration. Western Ash remained as the only bidder capable of furnishing fly ash within the specifications. HNUS Denver received a letter from National Minerals on May 26, 1992 stating that their company had set up a fly ash terminal in Denver and that they would like to be considered for providing material for our Rocky Flats Project. After evaluating proposals from the two original bidders, it was determined that the due date for bids on fly ash would be extended from

May 28 to June 18 in order to invite competition. National Minerals was issued an RFQ, and the original bidders were given the option of revising their bids. Pozzolanic International and Western Ash notified HNUS that there would be no change in their original proposals. The proposal from National Minerals was received on June 17 and opened on June 18, the extended closing date. Their proposal was $55,400 less than the other qualified bidder, Western Ash, and National Minerals is being recommended for supplying fly ash for the project.

581.5 Tons(±25%) High Calcium Hydrated Lime

Vendor	Total Value	W.O.
Harcros Chemical Group	$ 84,347	145.05
Ashland Chemical Inc.	$109,352	185.05
Industrial Chemicals Corp.	No Bid	
Chemical Sales Co.	No Bid	
Colorado Lien	No Response	
VanWaters and Rogers	No Response	

Both Bidders have a common source of supply which meets HNUS technical specifications, and identical delivery times. We recommend Harcros Chemical Group be awarded the purchase order for furnishing high calcium hydrated lime for the project based on low price.

Enclosed is a complete set of documentation for your use in evaluating our recommendations to award purchase orders for pozzolans, and a listing of cost codes to which material charges are to be allocated. The purchase orders should contain language such that EG&G will not be committed to any liquidation charges should the quantities of reagents vary. The above recommendations are dependent upon vendors' materials meeting HNUS Corporate Q/A requirements.

If their are any questions you may have concerning our recommendations, please contact me.

Sincerely,

Halliburton NUS Environmental Corporation

Ted Bittner
Project Manager

TB:tw

A:\BRADA\OCLTPOZ.PO
RF-MED-92-0370

KOHLI

QUALTEC, INC.
An Ogden company

July 30, 1992

Mr. William J. Raymond
Business Manager
HALLIBURTON NUS Environmental Corp.
5950 North Course Drive
Houston, Texas 77272

Dear Mr. Raymond:

Enclosed is QUALTEC's Best and Final Offer for supplying Pugmill Stabilization Services at the EG&G Rocky Flats Solar Pond/Pondcrete Stabilization Project located near Golden, Colorado.

If there are any questions, or any additional information is needed, please contact either Tony Gentile or myself.

Sincerely,

George H. Bannon
Vice President & General Manager

GHB/cb

Enclosure

cc: John Kohli

SALES AND MARKETING
Sam Houston Parkway, East
Suite 165
Houston, Texas 77060
Local: 713-448-4612

CORPORATE HEADQUARTERS
Brandywine Centre
550 Village Boulevard
Suite 160
West Palm Beach, Florida 33409
Local: 407-640-8900

RESEARCH AND DEVELOPMENT
725 Pellissippi Parkway
Knoxville, Tennessee 37932-3363
Local: 615-966-6800
Fax: 615-966-6740

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SCOPE OF SERVICES

QUALTEC proposes to perform the following scope of services as subcontractor to Halliburton/NUS for work to be performed at the Rocky Flats, Colorado Site. This proposal is in response to Halliburton's Inquiry No. 2315-3157-S2508, "Rocky Flats Solar Ponds/Pondcrete Stabilization and incorporates additional requirements in amendment No. 1, dated July 17, 1992.

QUALTEC will provide all manpower and equipment to mix approximately 4,000 tons of mixed wastes in QUALTEC'S high shear mix plant and drop the mixed material into a "Morgan Pump" which will be located below QUALTEC's mixer on site. In accordance with Halliburton's inquiry, QUALTEC has bid and will perform the job in four distinct phases:

Phase 1. Mobilization and training

Phase 2. Trial Run

Phase 3. Operations

Phase 4. Demobilization

Halliburton will provide QUALTEC with a liquid feed into its plant and will be responsible for the mixed material from the time that QUALTEC drops the material into Halliburton's pumping system.

QUALTEC will provide the following equipment with operators for lease to Halliburton:

One Fixation Mix Plant and Ancillary Equipment
(See equipment list attached.)

Equipment Modifications:

QUALTEC will need to make certain equipment modifications to meet Halliburton requirements for air emissions and product delivery. Equipment can not be ordered until Halliburton and QUALTEC have signed a letter contract. Therefore, QUALTEC's schedule is based upon the assumption that it will sign a 40% contract on or before August 3, 1992.

QUALTEC plans to use Sigma Services, Inc. to purchase and fabricate modifications to QUALTEC's plant along with QUALTEC's own staff. Current lead times indicate that all necessary materials can be received and installed within 6 weeks from time of commitment by Halliburton.

UNIT PRICE
BID PROPOSAL FORM

INQUIRY NO. 2315-3157-S2508

BIDDER: QUALTEC, INC.

TO: HALLIBURTON NUS Environmental Corp.

The undersigned Bidder represents, by tendering this Offer to perform the Sublet Work for the price specified herein, that it has made all investigations necessary into the location, nature and scope of the Sublet Work and other investigations he believes prudent and, being thoroughly familiar with the Inquiry Documents, including Addenda No. 1, offers this proposal, seeking HALLIBURTON NUS's acceptance, in order to create a contractual relationship.

1.0 BID PRICE SCHEDULE

1.1.1	Mobilization, erection and check out equipment, at site, no later than October 1,1992	1 LS	$ 93,814.02
1.1.2	Demonstration Test of Pugmill Daily Rate		$ 0.00
1.1.3	Operation of Equipment for Trial Run, October 2, 1992 thru November 12, 1992	1 LS	$ 130,364.69
1.1.4	Pugmill mixing operation 2000 Tons @ $60.03/Ton		~~$ 139,419.11~~ $120,060
1.1.5	Demobilization	1 LS	$ 82,512.90

Actual cost will be based on unit prices quoted below. $326,110.72

ASSUMPTIONS TO QUALTEC'S BID PRICE SCHEDULE:

MOBILIZATION

A. Direct Labor:

1) Training:

Halliburton has requested that all QUALTEC site personnel have 40 Hour OSHA Training as well as an additional 80 hours of site specific training. QUALTEC has included 80 direct labor hours of training to be performed on site at the Rocky Flats, Colorado facility plus an additional 8 hours each way for travel. Because of the limited availability of this type of training, QUALTEC has included a separate trip out to Rocky Flats, Colorado for the training and return to WPB, ~~Florida~~.

2) Project Submittals and Engineering:

Although there has been only limited information required for project submittals, Halliburton will provide its approved Health & Safety Plan. QUALTEC has included 160 hours of engineering and design time for the project duration.

3) Travel and Set Up:

Once plant modifications are completed in Plant City, Florida QUALTEC will mobilize its equipment and ship to Rocky Flats Colorado. QUALTEC has included 2 days to prepare the plant and related equipment for shipment, 5 days for travel to the site, 2 days for set up and 2 days for calibration of the equipment before the trial run.

B. Materials Categories:

1) Medical Monitoring:

Based upon the 6 individuals that QUALTEC expects to use on site only 3 personnel will require entrance physicals based upon having maximum manpower at the site of 6 workers during the two shift operations phase.

2) Health and Safety Supplies:

QUALTEC has included only steel toed boots for workers. E G & G /Halliburton will provide all other H&S supplies such as but not limited to: Tyveks, Gloves, Dosimeters, Respirators and any other related health and safety equipment that may be determined necessary for QUALTEC to carry out its work in a safe environment.

3) 40 Hour OSHA Training:

QUALTEC expects that it will have to provide one of its workers with a 40 hour OSHA course. This is based upon QUALTEC assuming that it can hire laborers from the Halliburton labor force that are already 40 hour OSHA and 80 hour site specific trained.

4) Subcontract: Engineering and Drawings:

QUALTEC will subcontract out plant drawings to a local engineering company.

5) Gasoline and Incidentals:

Although Halliburton is providing the diesel fuel for QUALTEC to use on site, at no cost to QUALTEC. QUALTEC will still need gasoline to run its miscellaneous site equipment.

6) Mobilization, Per Diem and Other Travel:

Mobilization will be from QUALTEC's equipment storage yard in Plant City, Florida. The one way distance is estimated to be 1,900 miles. There are 14 days per diem estimated for the 10 days of training, 2 days of travel and one 2 day weekend. Travel and set up is scheduled as follows: 2 days to prepare the plant for shipment, 5 days for transport, 2 days for set up and 2 days for calibration at Rocky Flats.

There are 5 round trip airfares for travel from Florida to Colorado and return for the 10 days of site specific training. Additionally, 2 cars and gasoline are included for travel of the 5 individuals during the 10 days of training, local travel in Plant City is included during mobilization.

TRIAL RUN

A. Direct Labor:

1) Work Day/Work Week

Amendment No. 1 indicated that a work day should be six 10 hour days . However, QUALTEC has laid out the trial run section of the job by working five, 8 hour days for a duration of 6 weeks with the following crew:

1 Project Manager
1 Equipment Manager
1 Plant Operator
2 Laborers
5 Total

The reason for the change in the work day is that during the testing phase, quality of mix and not production is of prime concern. Therefore, after conversations with Halliburton, it has been decided to reduce the work week to 40 hours, and keep the duration to 6 weeks.

2) Standard Commercial Items:

Represents routine maintenance items and incidental expenses.

3) Other Direct Costs & Per Diem:

Represents office supplies, postage and long distance phone calls. It is understood that Halliburton will provide QUALTEC with all other site services such as office trailer, copy machine, fax, bath and toilet facilities and minor secretarial services.

4) Equipment Rental:

As stated earlier, QUALTEC will provide, on a lease basis, the manpower and equipment to process approximately 2,000 tons of contaminated materials. See equipment list for specific components. The equipment rental cost for the planned 6 weeks of 40 hour operations is $25,995.00.

Other items to be rented are:

1 Flatbed
1 Utility Trailer
1 Pressure Washer
1 Service Truck
2 Pickup Trucks

5) Travel and Per Diem:

Two rental cars and gasoline are included for the crew along with two round trips to the site by the Director of Operations.

DEMOBILIZATION

A. Direct Labor:

1) Duration

QUALTEC has set its schedule that it will demobilize from the site accordingly:

1)	Disassembly of equipment for decontamination by Halliburton/E G & G.	5 Days
2)	Decontamination of QUALTEC's equipment by E G & G.	2 Days
3)	Reassembly of QUALTEC's equipment.	5 Days
4)	Preparation for shipment.	3 Days
5)	Transportation of equipment to Plant City, Florida.	5 Days
6)	Unload equipment.	2 Days

QUALTEC will use the 6 site personnel to perform all work, except for decontamination.

2) Materials

QUALTEC has included 4 exit physicals, per company procedures, for site personnel.

3) Subcontract

QUALTEC has a price from Sigma Services, Inc. to reassemble its mixing chamber and other related parts for $ 12,370.00.

4) Standard Commercial Items

Includes routine maintenance items, gasoline and incidentals.

QUALTEC, INC.
HALLIBURTON ROCKY FLATS
INQUIRY NO. 2315-3157-S2508

1.4 PROPOSED PRICES FROM PARAGRAPH 1.0

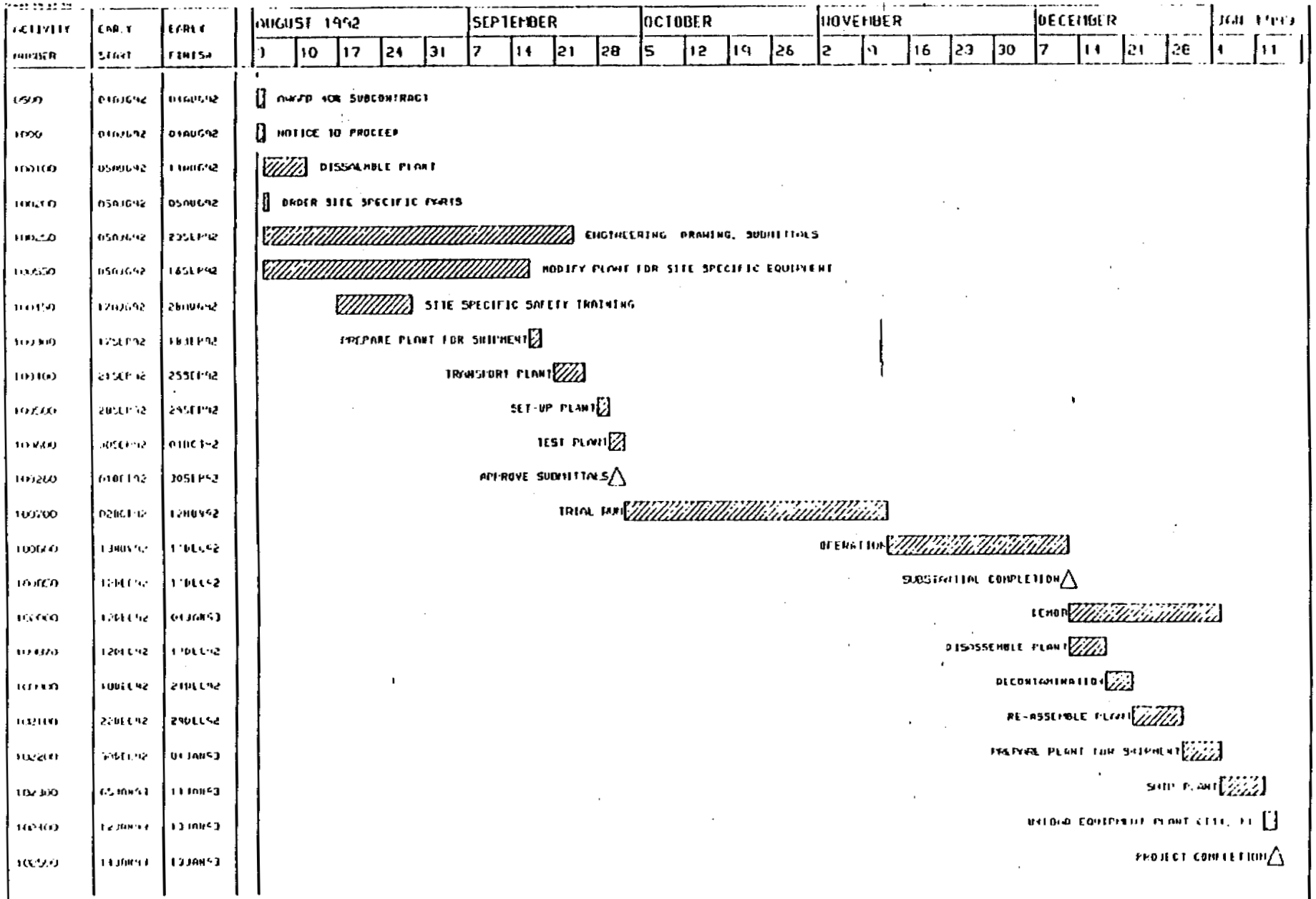
QUALTEC, INC. WILL SUPPLY DETAILED BREAKDOWN UPON AWARD OF SUBCONTRACT.

1.5	EACH ADDTIONAL MOBILIZATION	$44,188.00
1.5	EACH ADDTIONAL DEMOBILIZATION	$59,325.00
1.6	SEE PROJECT SCHEDULE	
1.7	SEE PROJECT SCHEDULE	

1.8 EQUIPMENT BUY OUT COST

Note: Prices do not include applicable sales tax or transportation charges.

PROCESSING PLANT (exclusive of the following)	$171,936.80
HIGH SHEAR MIXER	$61,448.40
BAG HOUSE (DUST COLLECTOR)	$7,090.20
FUEL CELLS	$1,181.70
20 KW GENERATOR	$14,180.40
206 HP HYDRAULIC DRIVE	$29,542.50



LS FINISH

DESC

△ MILESTONE

CRITICAL

PROGRESS

HALLIBURTON NUS

ENVIRONMENTAL CORPORATION

RUN DATE	30JUL92
START DATE	04AUG92
DATA DATE	01AUG92
FINISH DATE	13JAN93

QUALTEC, INC

580 VILLAGE BLVD SUITE 160

WEST PALM BEACH, FL 33409

(407) 640-8900

1.9 Definitions of scope of pay items.

1.9.1 Mobilization will include all costs incurred by the SUBCONTRACTOR in preparation, transportation, engineering, erection, testing, and start up activities of SUBCONTRACTOR provided services.

1.9.2 For the purposes of this quotation, a work day will be defined as 10 hours of production time. This will not include approximately one hour for entrance security and another one hour for exit security purposes when leaving the protected area. This daily charge will include subsistence or per diem charges for all SUBCONTRACTOR personnel.

Demobilization will include all costs incurred by the SUBCONTRACTOR in preparation, rigging down and transportation of SUBCONTRACTOR provided personnel and equipment back to SUBCONTRACTOR facility.

Standby time is defined as time that is not productive due to events out of SUBCONTRACTOR'S control and in which both personnel and equipment are ready, willing, and able to perform.

Idle time is defined as time that is not productive when equipment is ready to be operated, but personnel have been released from service by GENERAL CONTRACTOR for some specified time period.

2.0 TIME FOR PERFORMANCE

2.1 Bidder's technical documents and drawings will be submitted within 15 calendar days after Notice of Award.

2.2 Bidder requires GENERAL CONTRACTOR'S return of Bidder's technical documents and drawings within 5 calendar days after GENERAL CONTRACTOR'S receipt for approval of Bidder's technical documents and drawings.

2.3 Bidder's certified drawings will be submitted within 10 calendar days after return by GENERAL CONTRACTOR of Bidder's approved drawings.

2.4 Bidder is prepared to move on site and commence the Sublet Work 61 calendar days after GENERAL CONTRACTOR'S notice to proceed.

2.5 Upon Notice to Proceed, all Bidder-provided equipment and materials can be delivered to the jobsite within 54 calendar days.

2.6 Bidder will complete the Sublet Work within 132 calendar days after Notice to Proceed.

2.7 Bidder shall attach a Bar Chart schedule with the proposal. The schedule shall identify proposed milestone points in the work and shall include the manpower and equipment loading for each milestone.

BIDDERS REPRESENTATIONS

3.0 Through 8.0

Section 3.0 through 8.0, Representations and Certifications have been previously provided.

EQUIPMENT LIST

ITEM	DESCRIPTION	POWER RATING
1.	Dust Collector	5 H.P.
2.	5 Ton Surge Bin	
3.	Rotary Vane Feeder	1 H.P.
4.	Weigh Feeder	5 H.P.
5.	High Shear Mixer	90 H.P.
6.	Steel Containment Room	
7.	H.E.P.A. Filter	3/4 H.P.
8.	Air Lock Doors	
9.	Flat Bed Trailer	
10.	Control Panel	
11.	Wheel Platform	
12.	Landing Pad Platform	
13.	Generator	25 KVA/20 KW
14.	Hydraulic Power Unit	206 H.P.
15.	Process Slurry Line	

* Refer to "General Arrangement" for equipment locations

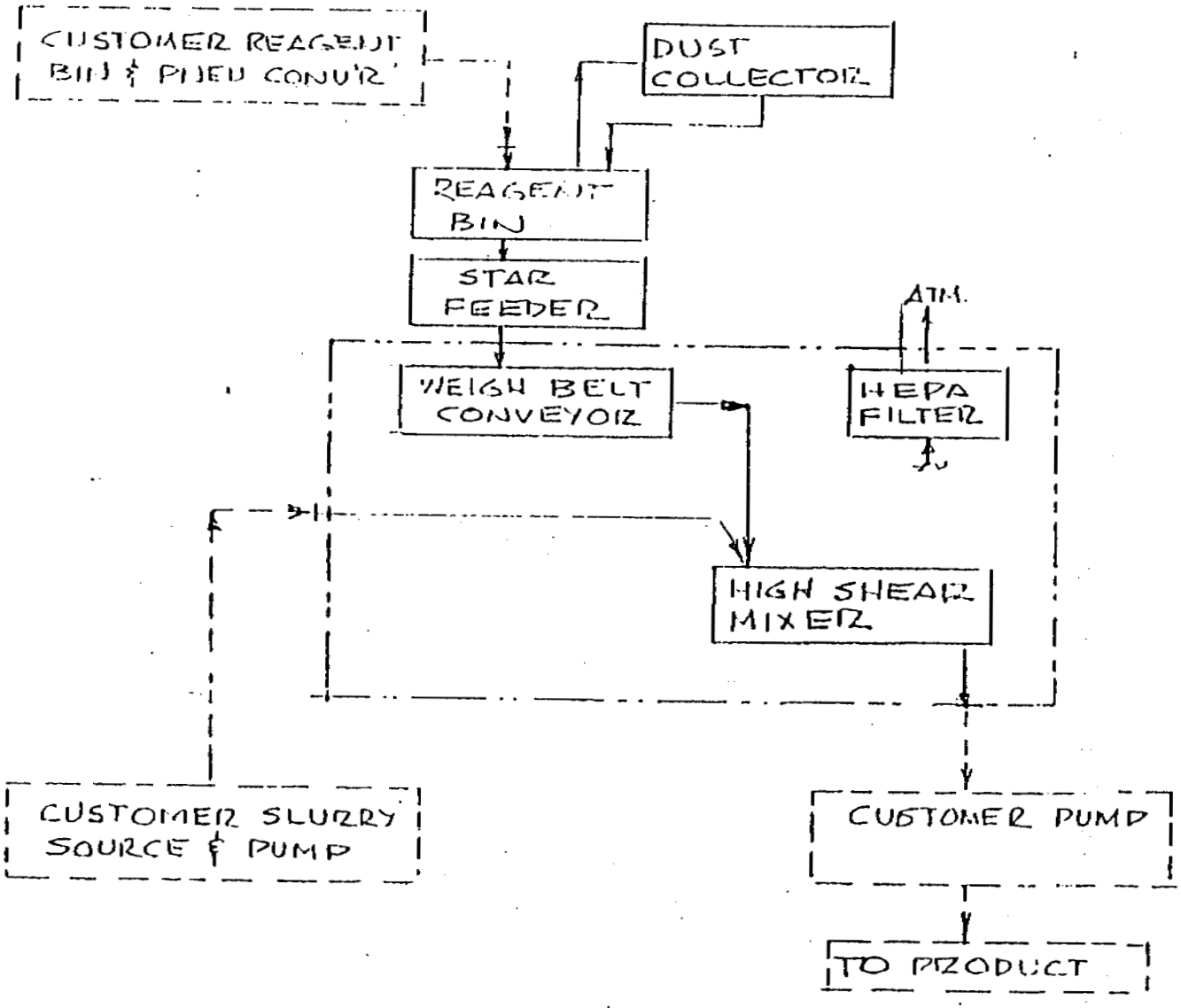
PROCESS FLOW DESCRIPTION

General (Refer to "General Arrangement" drawings for locations of superscript numbers)

The QUALTEC, INC. system is designed and operated on the basis of interrelated process flow streams. The primary components of the system includes a dry reagent storage area and feed system, transfer conveyors, and a unique high shear mixer[5]. (see PROCESS FLOW SHEET). Ancillary components are dry reagent dust collectors, H.E.P.A. filters, processing enclosures, trailers, chutes, and secondary containment. Additionally, QUALTEC, INC. typically includes contaminated material feed (raw feed stock) systems in the basic plant configuration but has not done so under the guidelines of this R.F.Q. It is understood the requirements are such that QUALTEC, INC. will provide an entry port[15] for the contaminated feed stock delivery systems. Halliburton NUS will construct and install the contaminated feed system. The QUALTEC, INC. entry port[15] can accommodate a slurry feed pipeline to match the requirements of Halliburton NUS upon receipt of certified design data.

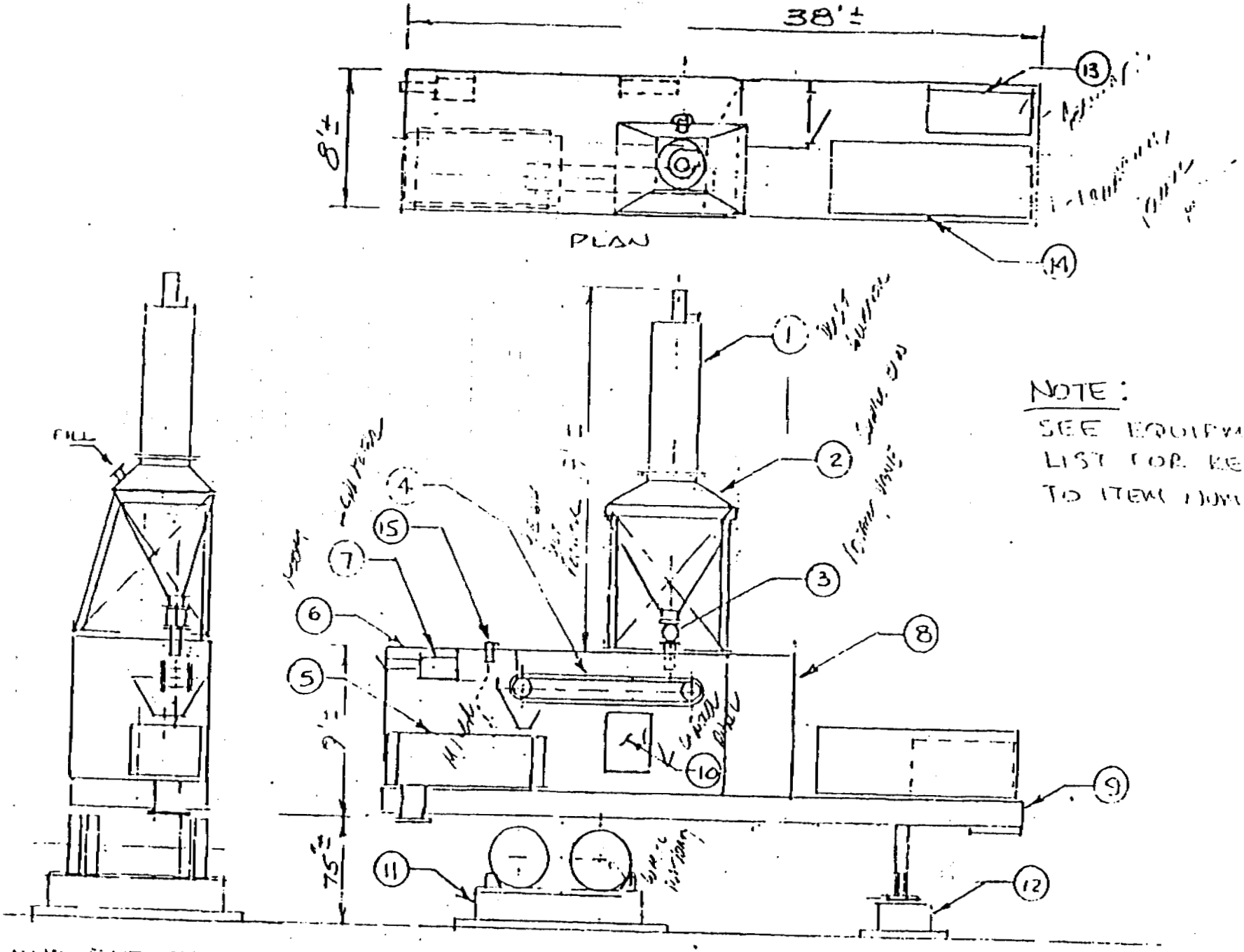
Specific Component Descriptions

Dry reagent additives will be stored on-site in the Halliburton NUS trailer-field storage containers #430-Z-05D & E and will be pneumatically conveyed to the QUALTEC, INC. 5 ton-daybin[2]. A dust collector[1] is mounted above the daybin[2] which has high and low level indicators to provide control of the amount of dry reagent fed from the Halliburton NUS trailer-field storage units. The daybin[2] stores the reagent for delivery to the high sheer mixer[5] at a controlled rate through a rotary vane feeder[3]. The rotary vane feeder[3] is



15A

QUALTEC INC. PROCESS FLOW SHEET



QUALTEC PLANT
GEN. ARR'GT

controlled by a ratio speed controller which receives a 4 to 20 milliamp signal from the DCS control system indicating the amount of contaminated feed stock being pumped to the high sheer mixer[5] (see PROCESS CONTROL INSTRUMENTATION DIAGRAM).

The regulated feed from the rotary vane feeder[3] is deposited on a weigh belt scale[4] system which conveys the dry reagent to the high sheer mixer[5] and weighs in the amount being transported. This weigh belt scale[4] signal serves two purposes:

1. To provide information to the DCS controller, i.e., the tons/hour being fed; the total quantity fed over a pre-determined period of time.

2. To provide a feedback signal to the rotary vane feeder controller to correct for over/under feed conditions.

NOTE: These signals are instantaneous as are the corrections made by the rotary vane feeder controller. This provides a feed rate which corresponds exactly to the requirements of the mix design.

The high sheer mixer[5] is the heart of the system where total integration of the contaminated feed stock and the pre-mixed dry reagent takes place. Once the materials are within the confines of the high sheer mixer[5], tremendous shearing forces are expended throughout the mix. The mix chamber has the feed stocks in a highly agitated state. During this processing phase, dust from the dry reagent is in suspension throughout the chamber. In order to maintain control over this dust and to retain it within the mix chamber, QUALTEC, INC.

provides a slight negative pressure on the internal chamber and a H.E.P.A. filtration system of a design specified by Halliburton NUS. Additionally, QUALTEC, INC. provides secondary containment of any possible dust escaping by enclosing the entire dry reagent feed system and high sheer mixer[5] operation within a sealed box container[6]. The enclosed operating environment has air lock doors[8] and is air conditioned. The reagents generate heat in the mixing process and the enclosure[6] is totally sealed against the outside environment except for the high sheer mixer discharge into the Halliburton NUS "Morgan pump". QUALTEC, INC. can integrate the operation of the "Morgan pump" with the mixing plant operation if Halliburton NUS provides complete operational data on the "Morgan pump". In order to provide adequate clearance for the "Morgan pump", QUALTEC, INC. provides wheel platforms[11] and landing pad platforms[12] to elevate and stabilize the flat bed trailer[9]. These platforms are of sufficient surface area to meet the required low ground pressure specifications of the site. The entire plant is independently powered and requires no external power sources. The primary power source is a diesel driven hydraulic power unit[14]. Electric is provided via a diesel driven generator[13] for power to the main control panel[10] and other miscellaneous electrical requirements.

The interface chute between the high shear mixer discharge and "Morgan pump" will be a pre-fabricated rubber chute. Specific design and material data will be provided upon award of the subcontract and receipt of certified drawings of the "Morgan pump" inlet hopper.

Halliburton NUS has visited QUALTEC's facilities at Plant City, Florida, and has conducted surrogate mix designs through this unique high shear mixer[5] and has intimate knowledge of the mixer design and performance characteristics. Halliburton NUS is acutely aware that the

QUALTEC, INC. system will perform the integration of the feed stocks on a continuous (no need to batch) basis, yielding high quality, high efficiency production of the desired product.

CLEAN UP OPERATIONS

Daily Clean up

Daily clean up shall consist of a regular schedule of maintaining the entire processing plant and associated equipment in such condition as to allow for safe, efficient and continuous operation and for expeditious start up and re-commencement of processing after any periods of work stoppage. Methods of clean up shall be performed by QUALTEC, INC. staff consistent with industry standards. Clean-out shall be performed at proper level PPE as determined by Halliburton NUS. QUALTEC, INC. shall be responsible for clean up only of QUALTEC, INC. equipment. Clean up of all contaminated feeds prior to the QUALTEC plant, and discharges beyond the QUALTEC plant, shall be the responsibility of Halliburton NUS.

High shear mixer clean-out shall be performed at such intervals and frequency as required by field conditions so as to maintain proper mixing by the unit. This clean-out is expected to consist of clearing paddles and discharge port of excess build-up. Build-up shall be permitted to cure sufficiently to allow for chipping or break off of excess build-up with hand tools. (Casing liner developed inside high shear mixer shall be maintained to promote efficient mixing. Casing liner shall be shaped and re-cast as required.) Dislodged excess build-up shall be manually removed and/or vacuumed from mixing chamber. Disposal of clean-out debris is to be performed by the OPERATOR. Clean-up regiment shall be overseen by QUALTEC, INC. Equipment Engineer. It is not necessary to remove all hardened material from the mixer on a daily basis. The primary concern is to provide

shearing surfaces exposed to the materials during the mixing operation.

Final Clean Up (Decontamination)

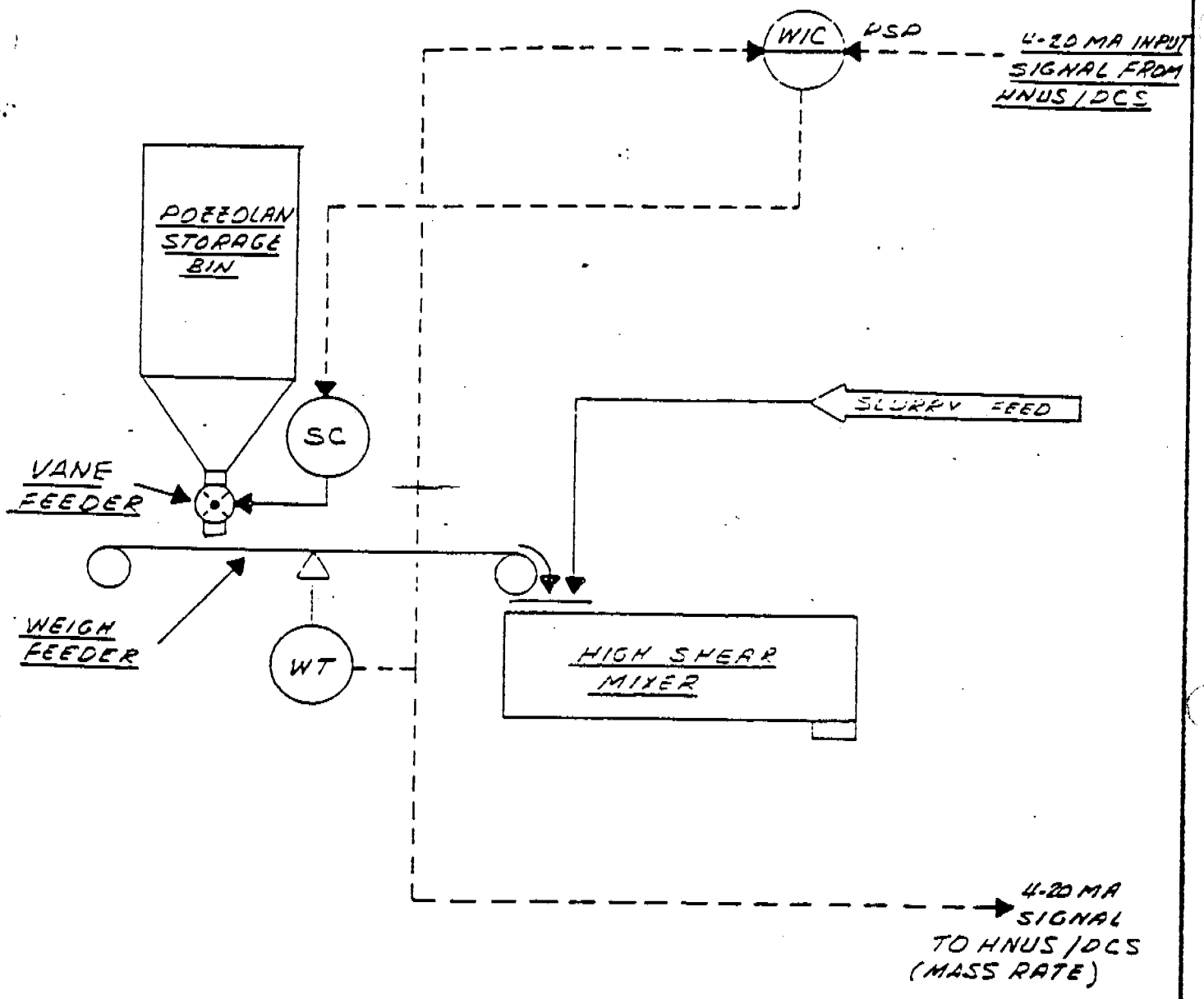
Final clean-up shall consist of returning processing plant to such condition where it is free of all project related soilage, build-up, foreign debris and contamination *. The casing liner inside high shear mixer shall be removed during final clean-up. Decontamination by final clean-up shall be to such extent as to allow the processing plant to be removed from the project site and to be relocated and operated off-site without additional clean-up. Disposal of clean-out and other debris to be performed by the OPERATOR. Final clean-up shall be overseen by QUALTEC, INC.'s Equipment Engineer.

* Radioactive decontamination of equipment shall be performed by OPERATOR.

DESCRIPTION OF CONTROLS OF PROCESS

(Refer to "Process Control Instrumentation" diagram for superscript designations)

The Halliburton NUS DCS controller will send a 4-20 MA signal into QUALTEC's flow indicating controller[FIC], indicating the contaminated material flow rate being delivered to the high sheer mixer. QUALTEC's controller is a ratio controller, which is located at the QUALTEC control panel. This input signal is converted to deliver a ratio output signal (determined by the mix design) of 4-20 MA, to the rotary vane feeder speed controller[SC]. The resultant dry reagent feed output then passes over the weight belt scale weight transmitter[WT] which generates a 4-20 MA signal back to the flow indicating controller[FIC] and to the Halliburton NUS DCS providing mass feed rate information. The weight transmitter[WT] signal received at the flow indicating controller[FIC] is used to compare the actual dry reagent feed rate with the requested dry reagent feed rate and makes the necessary correction to the output signal. This is an instantaneous correction which provides exact feed rates to ensure adherence to mix design specifications.



QUALTEC, INC.		
HNUS	SCALE NA	DRAWN BY F.M.D.
		REVISED
PROCESS CONTROL INSTRUMENTATION		
DATE	APPROVED BY	DRAWING NUMBER

AIR EMISSION CONTROL

Air Emissions shall be regulated as follows:

Dust control for day bin during loading and operation shall be controlled by a Bag House Dust Collector affixed to day bin.

Dust and fugitive air emissions on processing plant shall be controlled by EG&G approved Ionex Research Corp HEPA Filter System which produces negative pressure inside of the mixing chamber. Additionally, QUALTEC provides secondary containment of any dust emissions by enclosing the entire dry reagent feed system and high sheer mix operation within a sealed box container. Access into secondary containment area is through a double door airlock system.

Engine exhaust from diesel powered (Detroit 6-71) hydraulic power pak and diesel powered (Detroit 2-71) 20KW electric generator are discharged through non-filtered exhaust pipes fitted with noise reduction mufflers.

Air emissions forms for Detroit 6-71 diesel engine, Detroit 2-71 diesel engine, and Bag House Dust collector, are enclosed with this package.

Check-out procedures and standard operating procedures will be provided within 15 days of subcontract award.

AIR POLLUTION EMISSION NOTICE FOR [illegible]

FIRM NAME ..... PERMIT NO. _____

MAIL ADDRESS ..... PLANT LOCATION ..... COUNTY .....

PERSON TO CONTACT REGARDING THIS INFORMATION ..... TITLE ..... PHONE .....

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION .....

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of a unit or process which emits air pollutants
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	

B. STACK OR VENT INFORMATION (Identify below which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture	Plant ID No. for Stack
20 ft	8" XX	AMB. °F	1200 ACFM	4100 ft/min	UKN %	..DUST..COLLECTOR/BAGHOUSE.....

C. FUEL INFORMATION Description of Combustion Unit	Design Rate (10^6 BTU/Hr)	Kind of Fuel Burned	Actual Consumption (Tons, 10^3 Gal, 10^6 SCF)	Heating Value (10^6 BTU/Annual Units)	Per Cent by Weight Sulfur (0.XX)	Per Cent by Weight Ash (XX.XX)	Seasonal Use (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Fuel Specifics (% Sulfur, % Ash, etc.)
.....ELECTRIC.....	.N/A.....	....ELECTRIC...									
Make/model: 7.5 HP											
Boiler No.											

D. PROCESS INFORMATION Description of Processing Unit	Raw Materials: Solvents, etc.; Used Description	Annual Consumption	Design Rate (specify Units/Hour)	Finished Product Product Description	Annual Output
Make/model: GRIFFIN DUST COLLECTOR 36LS	.CEMENT/FLY ASH.....				
Model No.					

E. POLLUTION CONTROL EQUIPMENT Pollutant	Type of Control Equipment Primary	Secondary	Overall Collection Efficiency	Cost of Control Equipment Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)
Particulate	BAG HOUSE					
SO_2	..NONE.....					
NO_x	..NONE.....					
VOC	NONE					
CO	NONE					
Other	NONE					

EMISSION ESTIMATE TONS/YEAR	UNCONTROLLED EMISSIONS TONS/YEAR	ALLOWABLE EMISSIONS TONS/YEAR	ESTIMATION METHOD

REMARKS .....

Signature of Person Legally Authorized to Supply Data ..... Date .....

Typed Name & Title .....

DATA CODE _____

A. Visit: Type	Plant ID	Point	Date of Record	UTM Zone	UTM Coordinates: Horizontal	Vertical	SCC Code

Mail to: COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
[illegible]

MAY 12 '92 04:17PM BROWN & ROOT/EDSS

23A

PERMIT NO. _____

FIRM NAME .....

MAIL ADDRESS ..... PLANT LOCATION ..... COUNTY .....

PERSON TO CONTACT REGARDING THIS INFORMATION ..... TITLE ..... PHONE .....

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION .....

A. GENERAL INFORMATION	No. of Employees	Land Area	Normal Operation of Plant* Hours/Day	Days/Week	Weeks/Year	Seasonal Throughput (% of Annual) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	*Specify any significantly different schedule of a unit or process which emits air pollutants

B. STACK OR VENT INFORMATION (Identify below which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture	Plant ID No. for Stack
10.0 ft	4" ft	1100 °F	1510 ACFM	17300 ft/min	%	HYDRAULIC PUMP GENERATOR

C. BOIL INFORMATION Description of Combustion Unit	Design Rate (10^6 BTU/hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^3 Gal, or 10^6 SCF)	Heating Value (10^3 BTU/Annual Unit)	Per Cent by Weight Sulfur (0.XX%)	Ash (XX.X%)	Seasonal Use (% of Annual Use) Dec-Feb	Mar-May	Jun-Aug	Sep-Nov	Operating (Hours/Year)
Make/Model: DETROIT 6-71	.824001	DIESEL									
Serial No.											

D. PROCESS INFORMATION Description of Processing Unit	Raw Materials, Solvents, etc. Used Description	Annual Consumption	Design Rate (Specify Units/Hour)	Finished Product Product Description	Annual Output
Make/Model: HYDRAULIC PUMP/POWER PAK	NONE				
Serial No.					

E. POLLUTION CONTROL EQUIPMENT Pollutant	Type of Control Equipment Primary	Secondary	Overall Collection Efficiency	Initial Installation Cost	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	EMISSIONS ESTIMATE TONS/YEAR	UNCONTROLLED EMISSIONS TONS/YEAR	ALLOWABLE EMISSIONS TONS/YEAR	ESTIMATED ACTUAL
Particulate	NONE									
SO_x	NONE									
NO_x	NONE									
VOC	NONE									
CO	NONE									
Other	NONE									

REMARKS: .....

Signature of Person Legally Authorized to Supply Data ..... Date .....

Typed Name & Title .....

DATA YEAR _____

Mail to: COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
[303] 331-8[illegible]
[303] 331-[illegible]

For AIRS Use Only: AIRS	Plant ID	Point	Date of Record	UTM Zone	UTM Coordinates Easting	Northing	SCC Code

MAY 12 '82 UNITED ERCON & ROOT/EGSG

333

AIR POLLUTION EMISSION [illegible]

FIRM NAME ..... PERMIT NO. _____

MAIL ADDRESS ..... PLANT LOCATION ..... COUNTY .....

PERSON TO CONTACT REGARDING THIS INFORMATION ..... TITLE ..... PHONE .....

GENERAL DESCRIPTION OF THIS PLANT'S FUNCTION .....

A. GENERAL INFORMATION		Normal Operation of Plant*			Seasonal Throughput (% of Annual)				*Specify any significantly different schedule of a unit or process which emits air pollutants
No. of Employees	Land Area	Hours/Day	Days/Week	Weeks/Year	Oct-Feb	Mar-May	Jun-Aug	Sep-Nov	

B. STACK OR VENT INFORMATION (Identify below which stack if plant has two or more; refer to attached sketch of plant layout)

Height	Diameter	Temperature	Flow Rate	Velocity	Moisture	Plant ID No. for Stack
10.0 ft	2" x 2"	700 °F	410 ACFM	18800 ft/min	UKN %	20.KW.GENERATOR

C. FUEL INFORMATION

Description of Combustion Unit	Design Rate (10^6 BTU/Hr)	Kind of Fuel Burned	Annual Consumption (Tons, 10^6 Cal, or 10^6 CCF)	Heating Value (10^6 BTU/Annual Unit)	Per Cent by Weight Sulfur (XX.XX)	Per Cent by Weight Ash (XX.XX)	Seasonal Use (% of Annual Use) Oct-Feb	Mar-May	Jun-Aug	Sep-Nov	Hours Used (1 Jan.)
Make/Model: DETROIT 2-71	.290000	DIESEL									
Serial No.											

D. PROCESS INFORMATION

Description of Processing Unit	Raw Materials, Solvents, etc. Used: Description	Annual Consumption	Design Rate (Specify Units/Hour)	Finished Product: Product Description	Annual Output
20 KW GENERATOR	NONE				
Make/Models					
Serial No.					

E. POLLUTION CONTROL EQUIPMENT

Pollutant	Type of Control Equipment: Primary	Secondary	Overall Collection Efficiency	Costs of Control Equipment: Initial Installation	Annual Total Operating Cost	Annual Energy Used (Specify Units & Type)	EMISSIONS ESTIMATE TONS/YEAR	UNCONTROLLED EMISSIONS TONS/YEAR	ALLOWABLE EMISSIONS TONS/YEAR	ESTIMATION METHOD
Particulate	NONE									
SO_x	NONE									
NO_x	NONE									
VOC	NONE									
CO	NONE									
Other	NONE									

REMARKS .....

Signature of Person Legally Authorized to Supply Data ..... Date .....

Typed Name & Title .....

DATA YEAR _____

Point No.	Stack ID	Vent ID	SIC Code	Date of Permit	UTM Zone	UTM Coordinates: Horizontal	Vertical	SCC Code

Mail to: COLORADO DEPARTMENT OF HEALTH
AIR POLLUTION CONTROL DIVISION
4210 East 11th Avenue
(303) 331-8[illegible]
(303) 331-8[illegible]

MAY 12 '82 04:17PM BROWN & ROOT/EGSG

P.3

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WETTED PARTS LIST

While the probability of contamination of all QUALTEC equipment on site may be limited, it still must be considered possible. In response HNUS to request to list potentially wetted parts which may require replacement due to contamination, the following list has been drafted in a possible order of high to low potential of-contamination. (The order in this list is provided only as a possible scenario and does not necessarily reflect, predict, or restrict any differing order of contamination.)

ITEM	
15	Process Slurry Line
5	High Sheer Mixer
7	HEPA Filter
4	Weigh Feeder
6	Steel Containment Room
10	Control Panel
3	Rotary Vane Feeder
8	Air Lock Assembly
2	5 Ton Surge Bin
1	Dust Collector
9	Flat Bed Trailer
11	Wheel Platform
12	Landing Pad Platform
14	Hydraulic Power Unit
13	Generator

(See SECTION 1.8 BUY OUT COSTS)

EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

DATE August 4, 1992

TO S. Heiman, Procurement, Bldg. 131, X 3781

FROM D.R.Ferrier, Solar Ponds Project Office, Bldg. 750, X6456

SUBJECT HALLIBURTON-NUS CONTRACT PC-84017JB SP/DRF-156-92

Attached is a revised Phase II Statement of Work which replaces the existing (11/7/91) Phase II Statement of Work. It reflects the changes agreed to at our meeting on 28 July 1992.

brw

Attachment:
As Stated

STATEMENT OF WORK

SOLAR PONDS/PONDCRETE/SALTCRETE WASTE PROCESSING

PHASE II

SOLAR PONDS SLUDGE PROCESSING

(As defined August 4,1992)

1. GENERAL INFORMATION

The Rocky Flats Plant, hereinafter referred to as "Site" has low-level hazardous waste contained in five Solar Evaporation Ponds and a Clarifier tank. This Statement of Work (SOW) defines the requirements placed on Subcontractor to operate and maintain a processing facility, erected and tested under the Phase I Statement of Work, in order to process existing Sludge waste forms,described in Section 3.1 and 3.2 of this SOW into final waste form(s), in full compliance with the Process Control Plan (PCP) approved by Contractor under the Phase I Statement of Work.

The tasks to be performed by Subcontractor under Phase II of this subcontract are summarized as follows:

Task 1. Process the contents of 207C Pond and the Clarifier.

Task 2. Process the sludges contained in the 207A, 207B-North, 207B-Center, and 207B-South pond(s) as consolidated into 207B-South pond under Phase I of the Contract..

Task 3. Provide Onsite Laboratory services and Offsite Laboratory services for process testing during performance of Task 1 and Task 2 as specified in the approved Process Control Plan using the specified procedures and test methods.

2. WASTE PROCESSING PERFORMANCE PROVISIONS

2.1 "Process" is defined herein as "Contractor approved process."

2.2 "Approved procedures" or "Operating Instruction" is defined as "Contractor approved process".

2.3 Subcontractor shall process waste in accordance with Design Criteria, the equipment built to the Design Criteria, and the approved Standard Operating Procedures (SOPs) and the approved Operating Instructions (OI),to meet the process specifications of the Process Control Plan. Documentation of the performance of the process will meet the standards contained in the approved Quality Assurance Plan.

2.4 The Process Control Plan (PCP) is the document which specifies the performance standards and processing parameters which ensure that each processed waste unit (halfcrate) produced under Tasks 1. and 2. will be a waste form which meets the certification requirements as defined in the PCP. A halfcrate will be the smallest certifiable waste unit. Any halfcrate which fails waste

certification as a result of Subcontractors non-compliance with the approved PCP will be reprocessed during Phase III at no additional cost to the Contractor.

2.5 In the event that the approved process fails to produce final waste forms that comply with the Waste Certification Plan while processing within the operating parameters of the PCP, the Contractor may stop or terminate Subcontractor's Phase II performance and direct engineering, process, procedure or other changes within the Phase I Scope of Work.

3. WASTE FORM QUANTITIES FOR PHASE II

3.1 Subcontractor shall process all of the sludge, crystal, and water waste forms, except materials which are classed as oversized by the PCP, in the 207C Solar Evaporation pond and the clarifier tank which exist at the time of processing as Task 1.

3.2 Subcontractor shall process all sludge (except oversized materials as defined in the PCP) contained in ponds 207A and B series which has been consolidated into pond 207B-South under Phase I of the contract as Task 2.

3.3 Subcontractor shall analyze all samples as specified in the approved PCP.

4. SPECIFIC REQUIREMENTS

4.1 Subcontractor shall provide processing equipment operators, supervisory personnel, all stabilization reagent materials, transportation of reagent materials to the process areas, oil, and grease to operate the process equipment required to accomplish Tasks 1 and 2. Fuel to operate the process(es) shall be provided by Contractor. Operations shall be performed in accordance with the approved SOPs and OIs while maintaining the safety standards of the Site Specific Health and Safety Plan.

4.2 Cleaning

All materials used to clean Subcontractor equipment shall be handled in accordance with site procedures. Process water used to clean process equipment shall be incorporated into process slurry feed as defined in the PCP and SOP.

4.3 Laboratory Testing

Task 3 shall consist of analytical services, both onsite and offsite to support Tasks 1. and 2., waste processing.

4.3.1 Subcontractor shall provide qualified personnel to operate the onsite laboratory facility provided under Phase I of the contract located in Tent 5 on the 750 Pad. The onsite laboratory personnel shall obtain all samples and perform those analyses as specified by the PCP using approved laboratory procedures.

4.3.2 Offsite testing shall be performed by Subcontractors Pittsburgh Laboratory Facility. Subcontractor shall obtain and prepare all samples intended for shipment to Pittsburgh Laboratory for analysis as identified in the Process Control Plan. Subcontractor will provide all labeling, wrapping, and preparation for shipment. Contractor will provide Subcontractor necessary Contractor procedures, training, and support. Contractor will effect onsite and offsite transportation of samples packaged for offsite shipment. Subcontractor shall provide analytical services for the analyses specified in the PCP for the purpose of waste certification. Subcontractor shall be responsible to return samples to Site according to Contractor procedures upon completion of required analyses.

5. NOTICE TO PROCEED

Contractor will provide separate written notices to proceed for Tasks 1. and 2. when the following conditions have been met for that task:

5.1 All procedures related to processing each waste form have been approved by Contractor, including but not limited to, equipment operating procedures, Health & Safety Plan, QA Plan, and Process Control Plans for each Sludge form.

5.2 The operational checkout(s) for the sludge processing system has been completed successfully and approved by Contractor.

5.3 The process has been operated using the actual waste material and testing of the resultant processed waste forms demonstrates that the processed waste meets the waste certification requirements.

5.4 Subcontractor notifies Contractor in writing that PHASE II operations are ready to begin.

5.5 Contractor has provided Subcontractor written authorization to initiate PHASE II Waste Processing.

6. OPERATION

Contractor and Subcontractor will provide personnel and support facilities to support operation of the two sludge process trains provided under Phase I using the procedures approved and validated under Phase I.

6.1 HOURS OF OPERATION

Subcontractor shall provide two shifts of 10 hours each during performance of Tasks 1 and 2 or as directed in writing by Contractor. Operation of these tasks will be conducted six (6) days a week, Monday through Saturday, except for Labor Day holiday.

6.2 NOTIFICATIONS

The Subcontractor shall promptly notify the contractor of any equipment malfunctions or substandard performance which could be detrimental to the quality of the product or incur the risk of damage to personnel or the environment. Any loss of certification of Subcontractor Laboratory facility, as described in Section 3.3.1.1 of the Phase I SOW, to operate the Onsite or Offsite Laboratory shall be promptly reported to the Contractor.

6.3 SECURITY

6.3.1 Subcontractor shall observe all applicable provisions of the approved Solar Ponds Remediation Project Security Plan (Attachment 1 to this Phase II, SOW) for conducting operations within the Protected Area.

6.3.2 Subcontractor shall furnish written notification to Contractor, listing all additional Subcontractors that Subcontractor intends to employ; and any deviations from the

normal work day or work week at the site. Subcontractor shall fill out a Gate Pass Form (RF-34660) furnished by Contractor for all Subcontractors and all Subcontractors personnel requiring access to specified work areas. Subcontractor shall notify Contractor of the termination of employment of individuals submitted for access. Contractor reserves the right to deny access to any employee of Subcontractor. Access will not be granted to persons who are not citizens of the United States of America.

6.3.3 Contractor will issue each Subcontractor individual security badges for access to the plant. All badges are accountable property of the U.S. Government and shall be returned to designated Gate Security at the completion of work. Subcontractor's failure to return all badges may result in delay of contract closing and withholding of $500 for each missing badge from the final payment. Lost, missing or stolen badges shall be immediately reported to the Site Subcontract Administrator.

6.3.4 Contractor shall provide all qualified escorts required by the Security Plan for the number of uncleared Subcontractor Personnel and Subcontractor shifts as defined in 6.1 of this SOW.

6.4 TASK COMPLETION

Each processing task will be considered complete once all waste envisioned to be processed under that task has been processed. Subcontractor shall exert best efforts to complete both Tasks 1 and 2 on or before November 8, 1992. Subcontractor shall notify Contractor in writing of completion of processing. A task will be considered as complete after Contractor has notified Subcontractor in writing.

7. EQUIPMENT REMOVAL

Equipment decontamination and removal will occur under the provisions of Phase I after written notification of completion of a Task.

8. CONTRACTOR RESPONSIBILITY

8.1 Contractor will assist Subcontractor to the maximum extent possible in obtaining necessary required information, permits, access, and review of required documents necessary to expedite the timely completion of work on/or before schedule completion date outlined in this SOW. Operation of these tasks will be conducted six (6) days a week, Monday through Saturday, except for Labor Day holiday.

8.2 Contractor will remove final product forms at a rate adequate to support 20 tons per hour output.

8.3 Contractor shall provide sufficient number of trained and qualified personnel necessary to fully support waste processing activities in compliance with the approved operating procedures developed during Phase I.

8.4 Contractor shall provide all decontamination facilities, change trailer(s), and lunchroom(s) necessary to support subcontractor personnel.

8.5 Contractor will direct the sequencing of operation(s) to support the project.

8.6 Contractor will be responsible for providing required escorts and security plans to support this project.

8.7 Contractor is responsible for interfacing with the local union representatives.

8.8 Contractor will provide radiation worker trained and qualified personnel to perform repair on radiologically contaminated equipment normally operated by Subcontractor under the technical direction of the Subcontractor, when Subcontractor does not have sufficient personnel

available who are Radiation Worker trained and qualified according to site regulations.

8.9 Contractor is responsible for all trash collection and disposal related to the processing of waste forms.

8.9.1 Subcontractor is responsible for observing Contractor procedures regarding segregation of trash materials and trash disposal and handling.

8.10 Contractor is responsible for sample collection, sample transportation, and long term storage of waste processing samples.

8.11 Contractor is responsible for cleaning the Solar Ponds.

8.12 Contractor is responsible for removing rainwater from RCRA secondary containments as required by plant procedure.

8.13 Contractor is responsible for removing spills of product and waste feed from RCRA secondary containments as specified by plant procedures.

9. SUBCONTRACTOR RESPONSIBILITIES

9.1 Subcontractor and its Subcontractors of any tier, shall only utilize personnel during the Phase II operations, which were trained and qualified during Phase I.

9.2 Subcontractor shall provide all pozzolonic materials (reagents) in the type and quantity specified by the PCP, and Section 4.1 of this SOW.

9.3 Subcontractor shall provide for the processing of sludges during Phase II by providing personnel to operate Subcontractor process equipment as provided in Section 4.1, Section 6, and Section 6.1 of this SOW.

9.4 Subcontractor is responsible to pump the waste from the ponds to the CSS equipment operating within the parameters specified in the PCP and Operating Instructions for each waste form specified in Task I and Task II as defined in Section 1 of this SOW.

9.5 Subcontractor is responsible to provide processed waste form to Contractor as specified by the PCP for Tasks I and Task II.

9.6 Subcontractor shall receive and analyze waste form(s) samples, report results of analyses, return unused sample(s) and residues of samples to Contractor as specified in the PCP.

9.7 Subcontractor shall ensure that waste processing is performed in accordance with the PCP. Any processed waste which fails Waste Certification as a result of Subcontractor's non-compliance with the Process Control Plan (PCP) operating parameters shall be reprocessed by Subcontractor without additional cost to Contractor.

EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

DATE July 20, 1992

TO S. Heiman, Procurement, Bldg. 131, X3781

FROM D.R.Ferrier, Solar Ponds Project, Bldg. 750, X6456

SUBJECT STATEMENT OF WORK - PHASE II SP/DRF-140-92

Enclosed is the Statement of Work - Phase II - Solar Ponds Sludge Processing which updates the Phase II Statement of Work from the 11/7/91 version.

brw

cc:
L.A.Collins
D. Joseffy
E.F.Lombardi
M. Prochazka
J.D.Roberts

Enclosure:
As Stated

STATEMENT OF WORK

SOLAR PONDS/PONDCRETE/SALTCRETE WASTE PROCESSING

PHASE II

SOLAR PONDS SLUDGE PROCESSING

(As defined July 20,1992)

1. GENERAL INFORMATION

The Rocky Flats Plant, hereinafter referred to as "Site" has low-level hazardous waste contained in five Solar Evaporation Ponds and a Clarifier tank. These waste forms shall be processed by Subcontractor into a final certifiable waste form using the criteria, equipment and procedures developed and approved under Phase I of the contract.

The tasks to be performed by Subcontractor under Phase II of this subcontract are summarized as follows:

Task 1. Process the contents of 207C Pond and the Clarifier.

Task 2. Process the sludges contained in the 207A, 207B-North, 207B-Center, and 207B-South pond(s) as consolidated into 207B-South pond under Phase I of the Contract..

Task 3. Provide Onsite Laboratory services and Offsite Laboratory services for process testing during performance of Task 1 and Task 2 as specified in the approved Process Control Plan using the specified procedures and test methods.

2. WASTE PROCESSING PERFORMANCE PROVISIONS

2.1 "Process" is defined herein as "Contractor approved process."

2.2 "Approved procedures" or "Operating Instruction" is defined as "Contractor approved process".

2.3 Subcontractor shall process waste in accordance with Design Criteria, the equipment built to the Design Criteria, and the approved Standard Operating Procedures (SOPs) and the approved Operating Instructions (OI), to meet the process specifications of the Process Control Plan. Documentation of the performance of the process will meet the standards contained in the approved Quality Assurance Plan.

2.4 The Process Control Plan (PCP) is the document which specifies the performance standards and processing parameters which ensure that each processed waste unit (halfcrate) produced under Tasks 1. and 2. will be a waste form which meets the certification requirements as defined in the PCP. A halfcrate will be the smallest certifiable waste unit. Any halfcrate which fails waste

certification as a result of Subcontractors non-compliance with the approved PCP and approved procedures will be reprocessed during Phase III at no additional cost to the Contractor.

2.5 In the event that the approved process does not provide an adequate product,the Contractor may stop or terminate Subcontractor's Phase II performance and direct engineering, process, procedure or other changes within the Phase I Scope of Work.

3. WASTE FORM QUANTITIES FOR PHASE II

3.1 Subcontractor shall process all of the sludge, crystal, and water waste forms in the 207C Solar Evaporation pond and the clarifier tank which exist at the time of processing as Task 1.

3.2 Subcontractor shall process all sludge contained in ponds 207A and B series which has been consolidated into pond 207B-South under Phase I of the contract as Task 2.

3.3 Subcontractor shall analyze all samples as specified in the approved PCP.

4. SPECIFIC REQUIREMENTS

4.1 Subcontractor shall provide processing equipment operators, supervisory personnel, all stabilization

reagent materials, transportation of reagent materials to the process areas, oil, and grease to operate the process equipment required to accomplish Tasks 1 and 2. Fuel to operate the process(es) shall be provided by Contractor. Operations shall be performed in accordance with the approved SOPs and OIs while maintaining the safety standards of the Site Specific Health and Safety Plan.

4.2 Cleaning

All materials used to clean Subcontractor equipment shall be disposed of in accordance with site procedures. Process water used to clean process equipment may be incorporated into process slurry feed as defined in the PCP and SOP.

4.3 Laboratory Testing

Task 3 shall consist of analytical services, both onsite and offsite to support Tasks 1. and 2., waste processing.

4.3.1 Subcontractor shall provide qualified personnel to operate the onsite laboratory facility provided under Phase I of the contract located in Tent 5 on the 750 Pad. The onsite laboratory personnel shall perform those analyses as specified by the PCP using approved laboratory procedures.

4.3.2 Offsite testing shall be performed by Subcontractors Pittsburgh Laboratory Facility. Subcontractor shall prepare any and

all samples for shipment to Pittsburgh Laboratory for analysis as identified in the Process Control Plan. Contractor will provide offsite transportation of samples according to Contractor procedures. Subcontractor shall provide analytical services for the analyses specified in the PCP for the purpose of waste certification. Subcontractor shall be responsible to return samples to Site upon completion of required analyses.

5. NOTICE TO PROCEED

Contractor will provide separate written notices to proceed for Tasks 1. and 2. when the following conditions have been met for that task:

5.1 All procedures related to processing each waste form have been approved by Contractor, including but not limited to, equipment operating procedures, Health & Safety Plan, QA Plan, and Process Control Plans for each Sludge form.

5.2 The operational checkout(s) for the sludge processing system has been completed successfully and approved by Contractor.

5.3 The process has been operated using the actual waste material and testing of the resultant processed waste forms demonstrates that the processed waste meets the waste certification requirements.

5.4 Subcontractor notifies Contractor in writing that PHASE II operations are ready to begin.

5.5 Contractor has provided Subcontractor written authorization to initiate PHASE II Waste Processing.

6. OPERATION

Contractor and Subcontractor will provide personnel and support facilities to support operation of the two sludge process trains provided under Phase I using the procedures approved and validated under Phase I.

6.1 HOURS OF OPERATION

Subcontractor shall provide two shifts of 10 hours each during performance of Tasks 1 and 2 or as directed in writing by Contractor. Operation of these tasks will be conducted six (6) days a week, Monday through Saturday, except for Labor Day holiday.

6.2 NOTIFICATIONS

The Subcontractor shall promptly notify the contractor of any equipment malfunctions or substandard performance which could be detrimental to the quality of the product or incur the risk of damage to personnel or the environment. Any loss of

certification to operate the Onsite or Offsite Laboratory shall be promptly reported to the Contractor.

6.3 SECURITY

6.3.1 Subcontractor shall observe all applicable provisions of the approved Solar Ponds Remediation Project Security Plan for conducting operations within the Protected Area.

6.3.2 Subcontractor shall furnish written notification to Contractor, listing all additional Subcontractors that Subcontractor intends to employ; and any deviations from the normal work day or work week at the site. Subcontractor shall fill out a Gate Pass Form (RF-34660) furnished by Contractor for all Subcontractors and all Subcontractors personnel requiring access to specified work areas. Subcontractor shall notify Contractor of the termination of employment of individuals submitted for access. Contractor reserves the right to deny access to any employee of Subcontractor. Access will not be granted to persons who are not citizens of the United States of America.

6.3.3 Contractor will issue each Subcontractor individual security badges for access to the plant. All badges are accountable property of the U.S. Government and shall be returned to designated Gate Security at the completion of work. Subcontractor's failure to return all badges

may result in delay of contract closing and withholding of $500 for each missing badge from the final payment. Lost, missing or stolen badges shall be immediately reported to the Site Subcontract Administrator.

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6.4 TASK COMPLETION

Each processing task will be considered complete once all waste envisioned to be processed under that task has been processed. Both Tasks 1 and 2 shall be completed on or before November 8, 1992. Subcontractor shall notify Contractor in writing of completion of processing. A task will be considered as complete after Contractor has notified Subcontractor in writing.

7. EQUIPMENT REMOVAL

Equipment decontamination and removal will occur under the provisions of Phase I after written notification of completion of a Task.

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8.1 Contractor will assist Subcontractor to the maximum extent possible in obtaining necessary required information, permits, access, and review of required documents necessary to expedite the timely completion of work on/or before schedule completion date outlined in this SOW.

8.2 Contractor will remove final product forms at a rate adequate to support 20 tons per hour output.

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8.9 Contractor is responsible for all trash collection and disposal related to the processing of waste forms.

8.9.1 Subcontractor is responsible for observing all Contractor approved procedures regarding segregation of trash materials and trash disposal and handling.

8.10 Contractor is responsible for sample collection, sample transportation, and long term storage of waste processing samples.

8.11 Contractor is responsible for cleaning the Solar Ponds after Subcontractor has emptied them.

8.12 Contractor is responsible for removing rainwater from containments of diesel fuel tanks and generators as required by plant procedure.

8.13 Contractor is responsible for removing spills of product and waste feed from RCRA secondary containments as specified by plant procedures.

9. SUBCONTRACTOR RESPONSIBILITIES

9.1 Subcontractor and its Subcontractors of any tier, shall only utilize personnel during the Phase II operations, which were trained and qualified during Phase I.

9.2 Subcontractor shall provide all pozzolonic materials (reagents) in the type and quantity specified by the PCP, the Treatability Study Report, and Section 4.1 of this SOW.

9.3 Subcontractor shall provide for the processing of sludges during Phase II by providing personnel to operate Subcontractor process equipment as provided in Section 4.1, Section 6, and Section 6.1 of this SOW.

9.4 Subcontractor is responsible to provide personnel and equipment to pump the waste from the ponds to the CSS equipment in the manner specified in the PCP and

Operating Instructions for each waste form specified in Task I and Task II as defined in Section 1 of this SOW.

9.5 Subcontractor is responsible to provide processed waste form to Contractor as specified by the PCP for Tasks I and Task II.

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